APRIL 4, 1960

PAPER TRADE JOURNAL

Plastic Fourdrinier Wires . . .

Our hot-off-the-press report on an extremely significant event, with on-the-spot interviews and reports of mill people . . . p. 36

Finishing, Phase II . . .

Something can be done about it, like "A Scheduling Policy to Increase Finishing Efficiency." An expert tells how . . . . . p. 40

Editorial Dept.
University Microfilms, Inc.
313 N. First St.
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Paper sculpture by Giuseppe Baggi

Pulp from Gottesman means...

EXPERIENCE!

Bleached and Unbleached Sulphite • Bleached Hardwood • Groundwood
Bleached, Semi-Bleached, and Unbleached Kraft

Established 1886

THE GOTTESMAN ORGANIZATION

Gottesman & Company, Inc. • Central National Corporation
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Passes even the "white glove" inspection—thanks to new standards of cleanness by Dow Industrial Service

You may never have occasion to apply "white glove" requirements to the cleanness of your process equipment, steam generators, tanks and piping. But, if you do need this high degree of cleanness, Dow Industrial Service can offer it — as an additional service — in the chemical cleaning of *your* plant equipment.

These new standards were developed by Dowell for cleaning the piping networks of the missile launching facilities at Cape Canaveral. Combining the research and engineering facilities of the entire company, new techniques, materials and equipment were perfected to meet the necessary rigid specifications.

This new service is now adaptable for use in all types of American industry. For example, an intricate cleaning job was recently performed on a 3½-mile-long buried pipeline. The customer wanted to convert the six-inch line from hydrocarbon gas to carry oxygen. For this pure product the line had to be immaculate—free of all foreign materials. The plant was faced with the alternate of laying new pipe—a six week job at a cost of $150,000.

Using the new standards of cleanness, the line was cleaned of hydrocarbon residues, carbon black, grease, mill scale, and rust. The cleaning job was done in 3½ days at a cost of $20,000. Meanwhile, plant crews made mechanical alterations to the line at a cost of about $25,000.

The job was satisfactory in every way. Inspection showed the line was free of all foreign matter. The customer credited the job with saving them about $100,000. Also the plant made additional profits because the line was put back into use so quickly.

Ask about these new standards of cleanness and their possible application to your problems. This exclusive service may save you important money. Dow Industrial Service offers the cleaning services formerly provided by Dowell. For engineered recommendations or more information, call the office or station near you. Or write Dow Industrial Service, 20575 Center Ridge Road, Cleveland 16, Ohio.

Chemical Cleaning Services for all industry

DOW INDUSTRIAL SERVICE

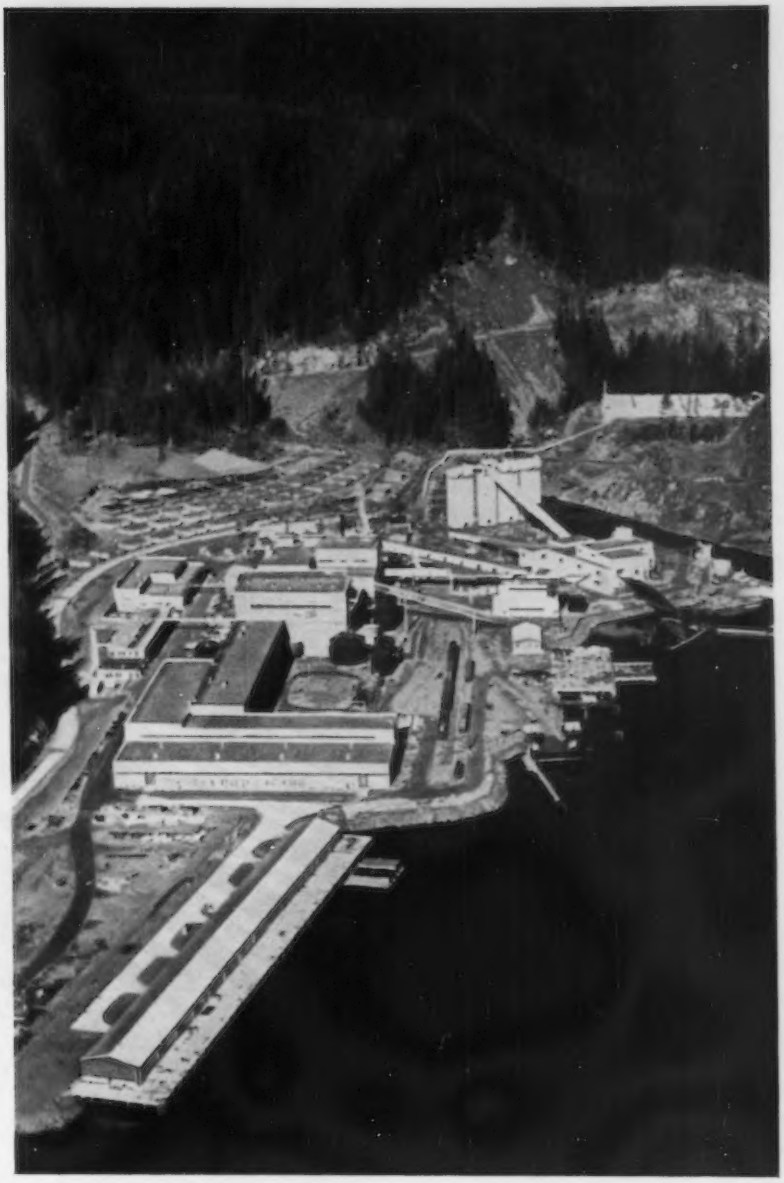
DIVISION OF THE DOW CHEMICAL COMPANY

DOW

340 TONS PER DAY

...MgO Plant On Line At Alaska Lumber & Pulp, Sitka

With the start of the 340 ton per day Alaska Lumber & Pulp Company plant, over 650,000 tons of pulp per year are being produced by the MgO Process.



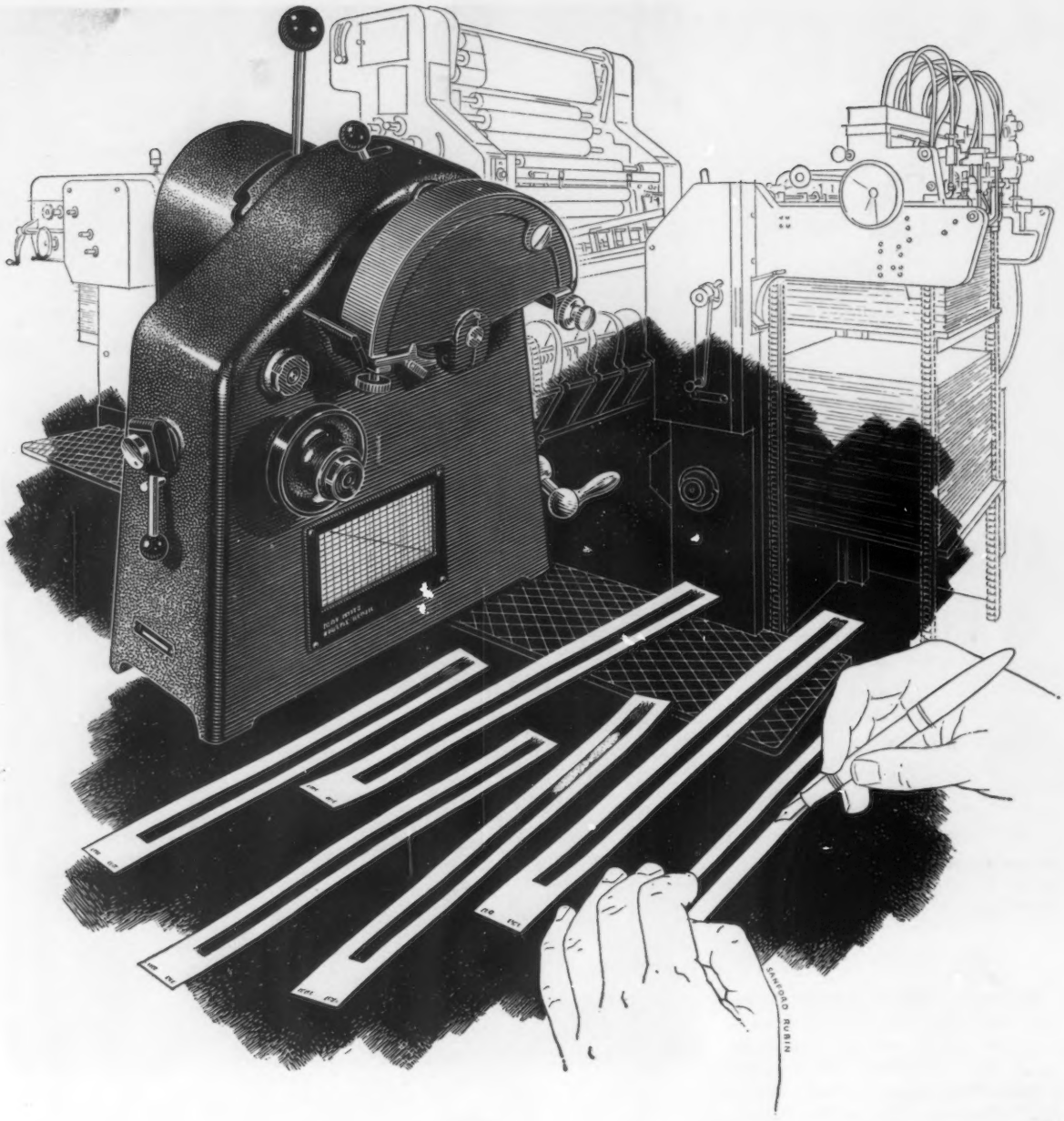
This is the second* magnesia bi-sulfite dissolving pulp mill in Alaska, and the largest industrial improvement since statehood. Utilizing the commercially-proved, closed cycle MgO Recovery Process, Sitka's predicted chemical usage is 20 lb of MgO and 50 lb of sulfur per ton of unbleached pulp.

Two B&W recovery boilers, each designed to process 550,000 lb of waste sulfite liquor solids per day, generate a combined total of 228,000 lb of steam per hour. Two B&W power boilers provide supplemental steam for power and process to 320,000 lb per hour burning bark or oil singly or in combination.

The MgO Process provides economical recovery of chemicals and heat from the waste sulfite liquors. In addition, air pollution and process odors are reduced to an absolute minimum. The Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

Sitka *is the fifth MgO plant built in recent years in the continental U. S. Others are Weyerhaeuser Timber Company, Longview, Washington; Ketchikan Pulp Company, Ketchikan, Alaska; Weyerhaeuser Timber Company, Cosmopolis, Washington; Brown Company, Berlin, New Hampshire. A sixth plant is on order for Hylite Bruks in Sweden.*

P-826 B&W THE BABCOCK & WILCOX COMPANY
BOILER DIVISION



These Exacting Tests Tell the Stayco Story

Accurately demonstrate that Stayco® Starches improve pick resistance, surface sizing . . . increase internal bond and strength.

The I.G.T. printability tester closely approximates the tremendous pounding and demands today's high-speed presses make on papers. Results of these tests consistently show Stayco Starches improve pick resistance . . . smoothness of printing surface . . . ink penetration rate and sheet strength, to meet these most rigid requirements.

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Decatur, Illinois

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PAPER TRADE JOURNAL

PUBLISHED WEEKLY SINCE 1872

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REMEMBER THESE DATES

May 23-25. TAPPI Coating Conference, Edgewater Beach Hotel, Chicago, Ill.

June 14-16. TAPPI Bleaching Conference, Edgewater Beach Hotel, Chicago, Ill.

June 7-9. PIMA National Meeting, St. Francis Hotel, San Francisco, Calif.

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EVERY TYPE—EVERY USE

SKF®

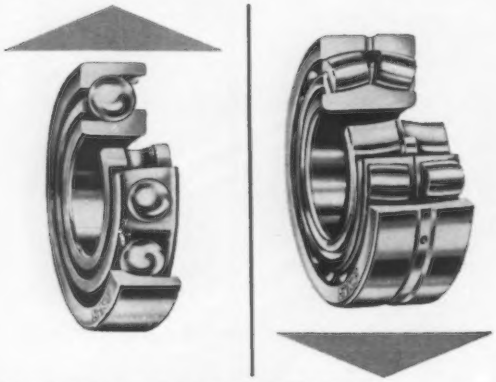
INDUSTRIES, INC., PHILADELPHIA 32, PA.

Spherical, Cylindrical, Ball, Tyson Tapered and REED Miniature Bearings

ANGULAR CONTACT BALL BEARING

This is the bearing to use when you need a high-speed bearing to support either (a) heavy thrust load, or (b) thrust load combined with radial load. It lends itself to various mounting arrangements. For example, if you need axial rigidity and high radial capacity you can mount two of these bearings in pairs either face-to-face or back-to-back. Or, if very high thrust capacity is needed, you can mount two or more of these bearings in tandem.

This standard bearing is available in over 80 sizes of single- and double-row types. Bore sizes range from ¾" to just over 7".



SPHERICAL ROLLER BEARING

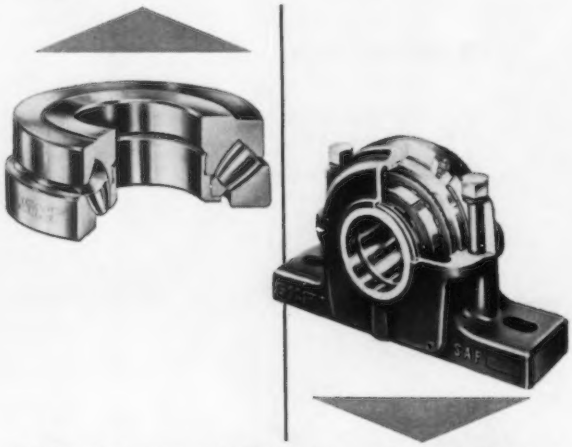
SKF invented the spherical roller bearing almost forty years ago. Since then, we've improved the original design several times—so that, today, our Type "C" spherical roller bearing offers longer life and 33⅓% greater capacity.

This increased capacity is largely due to the number, size and shape of the rollers—and the improved accuracy with which they're guided. Because these bearings are inherently self-aligning, their full capacity is always available for substantial thrust load in either direction as well as heavy radial load. These bearings also have special lubricating grooves that channel lubricants directly to the spherical rollers.

SPHERICAL ROLLER THRUST BEARING

Need a thrust bearing capable of carrying unusually heavy loads? Then specify this self-aligning spherical roller thrust bearing. It will carry either heavy thrust or combined thrust and radial loads. Because of its ability to carry high thrust at high speeds, this bearing is frequently chosen over large angular contact ball bearings for heavy-duty applications.

SKF makes this bearing in twenty-five standard sizes ranging from 4.3" to 14.9". And it's competitively priced.



TYPE SAF PILLOW BLOCK...with self-aligning ball or spherical roller bearings

Here's a rugged cast-iron pillow block that provides high efficiency with low friction.

We make this split pillow block with ball bearings for normal loads and with spherical roller bearings for heavy loads. We also equip it with Triple-Seal rotating rings that effectively protect the bearing from abrasives and corrosives, and prevent oil or grease from leaking out.

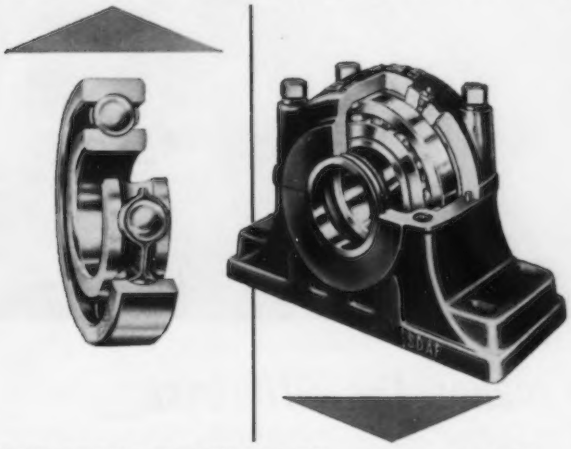
This pillow block can be mounted directly or with an adapter. Stabilizing rings are provided at no extra cost for applications where a "held" bearing is required to maintain shaft location. For heavy-duty applications, a cast steel housing (Type SAFS) is available. Shaft sizes from ¾" to 10½".

Only SKF can offer you unbiased bearing recommendations—because only SKF produces all four major types of anti-friction bearings: spherical, cylindrical, ball, and tapered roller bearings. For complete details on each type, just call the nearest of the twenty-four SKF sales offices.

SINGLE-ROW DEEP-GROOVE BALL BEARING

Here's a ball bearing that does two jobs, and does both of them well. It sustains heavy radial load as well as thrust load in either direction. Not only that, this bearing can be grease-lubricated when used at normal speeds and lubricated with oil at high speeds.

Yet this is a standard SKF bearing, mass-produced in various sizes at our automated Altoona (Pa.) plant. It's available in over 100 sizes ranging from over 5/8" O.D. to almost 16" O.D., and with various seal, shield and snap-ring combinations.



TYPE SDAF PILLOW BLOCK...with spherical roller bearings

Need an exceptionally sturdy pillow block? One that can withstand abnormal shock loads or heavy thrust loads day after day? Then specify SKF Type SDAF.

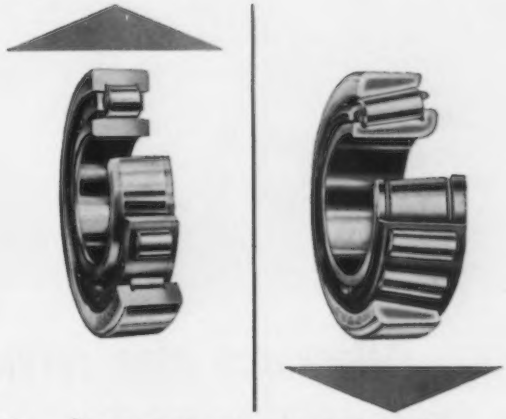
To provide maximum strength, four heavy bolts secure the cap of this pillow block to the base. Both halves are accurately aligned by dowel pins. And like the Type SAF, this pillow block comes equipped with Triple-Seal rotating rings that protect the bearing from foreign matter and retain the lubricant.

Type SDAF pillow blocks are made of cast iron but are also available in cast steel (specify Type SDAFS). They can also be mounted directly or with an adapter. Shaft sizes range from 2-11/16" to 14".

CYLINDRICAL ROLLER BEARING

Got a space problem? Here's a bearing that gives you high radial capacity—at very high speeds—in relatively small space. It's the SKF cylindrical roller bearing—which provides high radial capacity and minimum shaft friction. Controlled shaft end float within this bearing is a natural advantage of its design.

You can get prompt delivery in 154 bore sizes ranging from just under 1" to 6". Double-row cylindrical roller bearings are also available in bore sizes from 1" to 9.5".



Tyson® TAPERED ROLLER BEARINGS

What type of tapered roller bearing do you need: single-, double- or four-row? SKF's division, Tyson Bearing Company, makes all three of these types in a wide range of standard sizes.

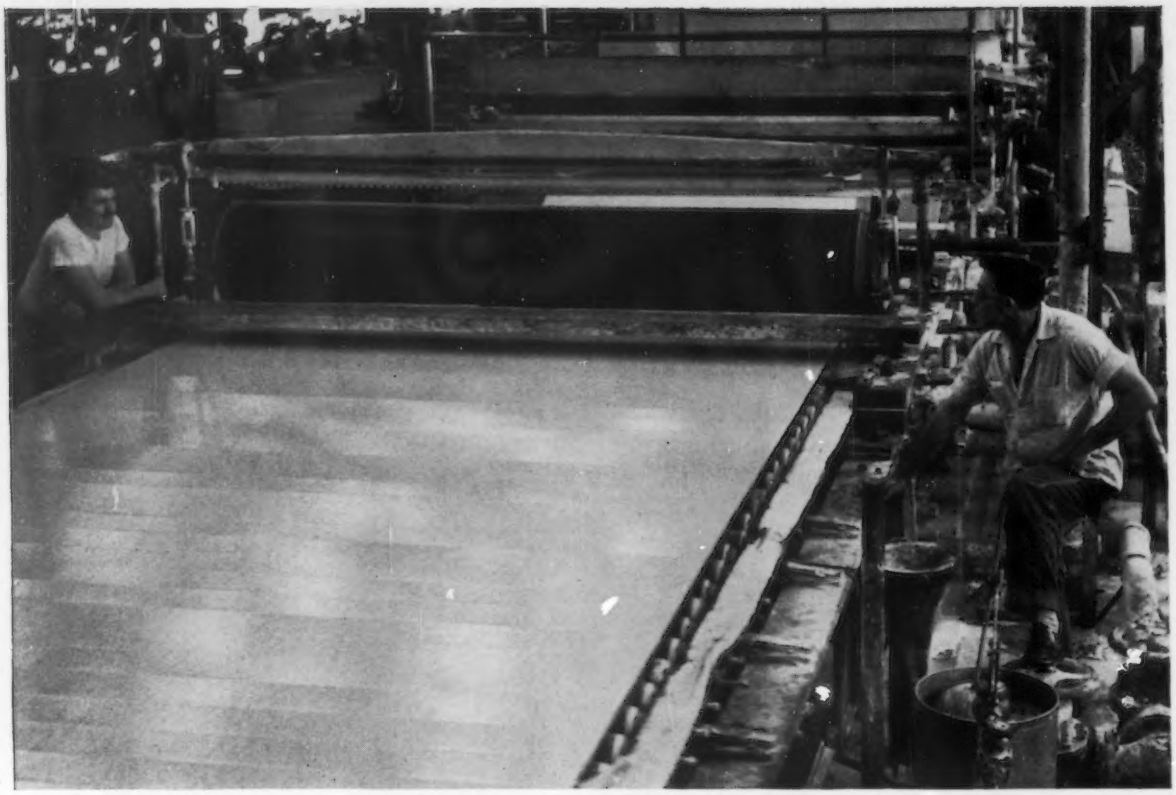
The single-row type is especially suitable for carrying radial loads simultaneously. Double-row types are designed for use where the radial capacity of two single-row bearings is required. For special applications, the four-row type offers very high radial capacity in limited space.

All Tyson tapered roller bearings are interchangeable, size for size, with other makes of tapered roller bearings where the part numbers are the same.

5949

®REG. U. S. PAT. OFF.

Papermakers Throughout the Northeast Look to TYER for Rubber Covered Rolls

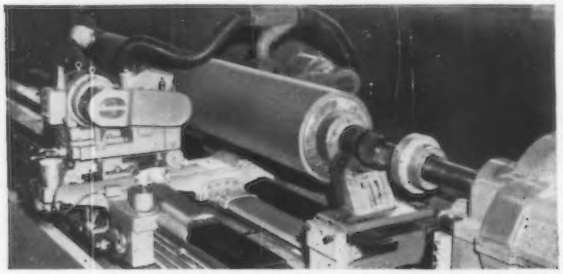


Research plus service makes the difference

More and more papermakers throughout the Northeast are finding that it pays to do business with Tyer.

With facilities to handle the industry's largest rolls, this hundred-year-old company is building an enviable reputation for service.

Newly developed Tyer roll compounds such as Tyerock and Tyerstone super-hard press rolls, Tyershed table rolls, and special roll formulas for use where rolls are subject to attack by chemicals and high temperatures are a result of Tyer's intensive research and developments.



If you are a papermaker in the Northeast, don't overlook the many advantages that Tyer offers you in the way of extra quality and service.

Your Tyer Sales Engineer is ready to help you with Rubber covered roll problems of any description. Be sure to call him.

TYER

Tyer Rubber Company, Andover, Mass.

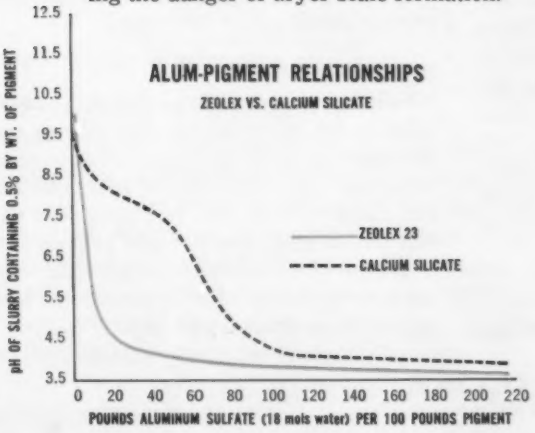
One of the few paper makers who can't be helped by HUBER ZEOLEX

The paper wasp—nature's paper maker extraordinary—can ignore brightness, opacity or cost. But *papermakers* the world over must meet and solve these problems daily. Brightness and opacity equal to that from high-cost pigments can be obtained at *lower cost* with Huber Zeolex. In successful world-wide use as a filler, Zeolex upgrades paper made from de-inked stocks; meets government opacity specifications for offset paper and has proved successful in board specialties, writing, offset and book stock.

Tried, proven and used in carload lots, Zeolex 23 is one of a related group of finely divided sodium silico aluminates which can be "tailored" by Huber to fit your special paper making needs.

Let our Zeolex researchers help you with your problem. Send for descriptive folder and free working sample of Zeolex—today. Available in beaded or non-dusting pelleted form.

This graph compares Zeolex 23 with calcium silicate pigments now being used as paper fillers. Note the low alum demand with Zeolex—in itself an economy—lessening the danger of dryer scale formation.



The Zeolexes are finely divided synthetic sodium silico aluminates, presently made within the following ranges of physical properties:

Brightness (G.E.)	93-95.
Average Particle Diameter (microns)	0.02-0.05
Oil Absorption (cc/100gm)	125-165
Surface Area (B.E.T.)	50-200
Refractive Index	1.51-1.55
pH (20% slurry)	5-12
Specific Gravity	2.1
Density (lbs./cu. ft.)	10-20

HUBER **J. M. HUBER CORPORATION,** 630 Third Avenue, New York 17, N. Y.

Mines and Plants: **HUBER, GA., GRANITEVILLE & LANGLEY, S. C.**

AN IMPORTANT NEW DEVELOPMENT IN PAPER PACKAGING AND SHIPPING

New Signode way gets paper to destination in excellent condition

Paper poses a problem that has probably vexed mill and printer alike for as long as paper has been shipped.

How do you keep packaged paper from racking and shuffling during shipment?

Good arrival condition is especially important for fine paper. Damaged edges and misalignment of stacks foul up the performance of high speed presses. And, as just about everybody knows, paper and speed and deadlines are often wrapped up in the same package.

IT'S ONLY AIR

Air is what makes trouble in the packaging of paper. Air is trapped between the sheets as paper is stacked. Trimming helps seal the air in.

IT'S GOT TO GO

Getting that air out is the problem, or was before Signode found the way—but more about that later. Ever try to tighten the belly band on an ornery horse? That's pretty much what paper mills were up against when they applied ordinary strapping techniques to their quality packaged products.

Sometimes, experimentally, they'd throw caution to the winds—beef up top cleats or battens, sacrifice a few of the top (and sometimes bottom) sheets to denting, and really tighten up those steel straps to the limit. Know what would happen in most cases? After a few days of just sitting, air would leak out of the package, and the straps would be loose.

NOW—THE ANSWER

Signode has been working on this problem with leading paper mills for many years. The answer and the methods that make it work are now available. Compression is the heart of it... the new Signode Compression Strapping Station.

Correct compression expels the air between the sheets, but does not damage the paper.

IT WORKS

Compression strapping the Signode way, which means combining it with other good packaging practices, practically eliminates shuffling, reduces racking, minimizes objectionable bowing in skid tops, and permits substantial over-all savings in paper packaging time *and* cost.

WE'RE READY

Signode has established a group of competent, trained, and experienced specialists in paper packaging. These men, in addition to and together with our regular field engineering, testing laboratory, and sales representative staffs, are ready to serve paper mills as engineering consultants. They are ready to help you in the important big or little changes in your packaging practices that will get your paper to destination in perfect condition, at less cost.

YOU'RE INVITED

We recognize your right to skepticism, your right to ask to be shown. We, in turn, ask the opportunity to show you what is being done now and to relate it to *your* practices and requirements. We feel sure that you will find it most worth while to look into this, now. The first step is simple. Just write on your letterhead for information about compression strapping of paper.

First in steel strapping

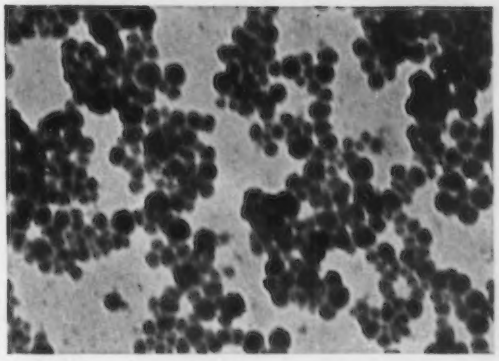
SIGNODE STEEL STRAPPING CO.

2677 N. Western Avenue, Chicago 47, Illinois

Offices Coast to Coast. Foreign Subsidiaries and Distributors World-Wide
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

NALCOAG® Adds ANTI-SLIP Features to Your Kraft, Boxes or Bags with Low-Cost 49-50% Colloidal Silica

Coating of Nalcoag Improves Load Stability, Reduces Slippage of Bags and Cartons During Shipping and Handling



Silica particles in Nalcoag are so small they are hardly visible even in this photomicrograph at 65,000 magnifications. Nalcoag coatings on paperboard containers are not visible, but they create a powerful frictionizing effect on treated surfaces. Products packaged in bags or boxes are much safer during shipping, handling and stacking if the packages have a non-skid Nalcoag coating.

Now you can add a *non-skid* feature, *another sales advantage,* to the paper and paperboard you make for use in shipping containers . . . and you can add it economically with low-cost Nalcoag colloidal silica.

Protect Products, People

Sliding boxes, bags and cartons are a dangerous and expensive problem. Damage to products during shipment is often traceable to slipping and sliding containers . . . and the possibility of falling bags and cartons is an ever present hazard to the men engaged in shipping, receiving and warehousing operations.

Nalcoag coatings create a frictionizing effect that greatly reduces the surface slippage. Bags and boxes stack higher with a far greater margin of safety . . . loaded forklifts travel faster, take steeper ramps and inclines with Nalco treated non-slip loads.

Improve Package Appearance

Even though a Nalcoag coating is invisible, it can produce visible improvements in containers. Treated bags and boxes have good soil resistance qualities . . . are cleaner, better looking on reaching destinations. And when a Nalcoag coating is applied *before* printing it has a sealing effect that reduces ink penetration, stops "feathering" and assures a sharper, cleaner package design that enhances customer appeal.

Economical, Easy-to-Apply

Effective frictionizing can be accomplished with very low dosages of Nalcoag. In some cases as little as 1/100 lb. of silica will treat 1000 square feet of paperboard, and seldom is more than 1/10 lb. required.

New Nalcoag 1050 gives you real economy in the highest silica concentration yet available . . . a highly stable, fluid, easy-to-use product of *49–50% silica!* It goes farther, lasts longer than the dilute 30% concentration now widely used . . . and it markedly reduces shipping, storage and handling costs.

Application of Nalcoag to sheet or board is relatively simple. Spraying, roller-coating and calender stack applications have all been used successfully and can be readily adapted to most mill operations.

Ask For Product Data, Technical Help

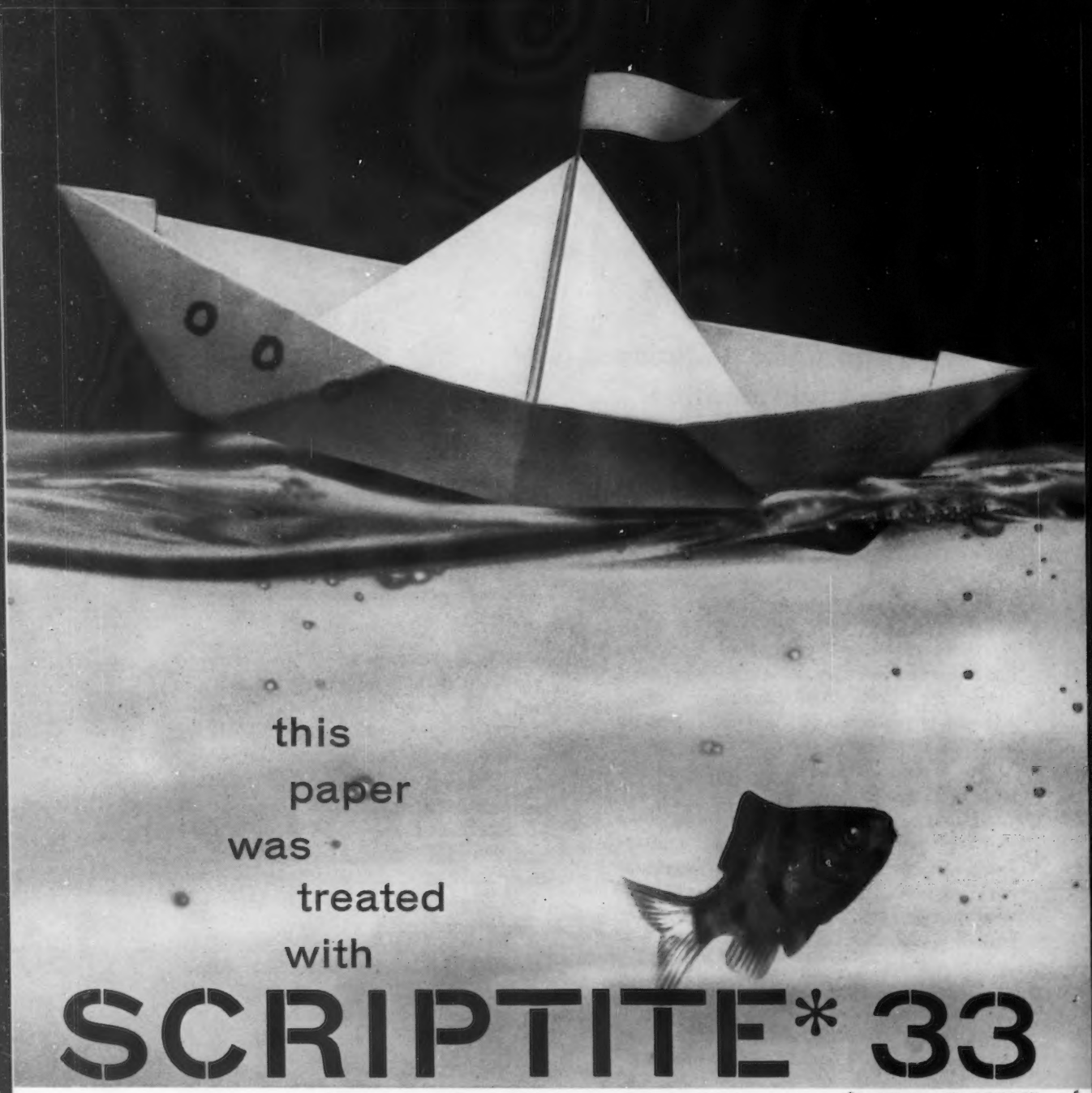
Nalco technical people are ready to help you make a better, safer, *non-skid* product. They will work with you *in your mill* . . . provide prompt, experienced assistance in establishing the best method of application and the optimum chemical dosage.

Product data on Nalcoag is ready for you, too. Why not write for it today . . . and ask us about *anti-slip* before your customers ask you!

NALCO CHEMICAL COMPANY
6216 West 66th Place • Chicago 38, Illinois
Subsidiaries in England, Italy, Mexico, Spain, Venezuela and West Germany
In Canada: Alchem Limited, Burlington, Ontario

Nalco® ...Serving the Paper Industry through Practical Applied Science

Nalco CHEMICALS



*SCRIPTITE, LYTRON: Reg. U. S. Pat. Off

Monsanto Scriptite 33—a melamine resin supplied as a dry fine powder—imparts high wet strength to many paper products. It increases wet bursting strength, dry tensile strength, wet rub resistance . . . improves dry stiffness, dry mullen, folding endurance, wax pick, dimensional stability. Monsanto offers a wide range of Scriptite resins for increasing the wet strength and water resistance of paper and board. Also available are Monsanto Lytron resins, water dispersal resin polymers, for efficient paper and board coating. For complete information of Scriptite 33 and other Monsanto paper resins, write Monsanto Chemical Company, Plastics Division, Room 748, Springfield 2, Mass.

Monsanto®

MONSANTO DEVELOPER IN **PLASTICS**

The Monsanto line of paper resins also includes: **SCRIPTITE 40** *urea type wet-strength resin.* **SCRIPTITE 54** *water-insoluble adhesive for paper and liner board.* **SCRIPTITE 55** *low viscosity resin for improved water resistance, wet and dry rub resistance with easy handling.* **SCRIPTITE 52** *in combination with formaldehyde, gives water resistance to folding boxboard and jute liner.* **SCRIPTITE 50** *unsurpassed printability, improved surface characteristics on boxboard.* **SCRIPTITE 45** *new thermosetting resin for stabilization of paper.* **LYTRON*** *water dispersal resin polymers for coatings.*

BIG JOB

Photo courtesy Patent Scaffolding Co.

Complete Service

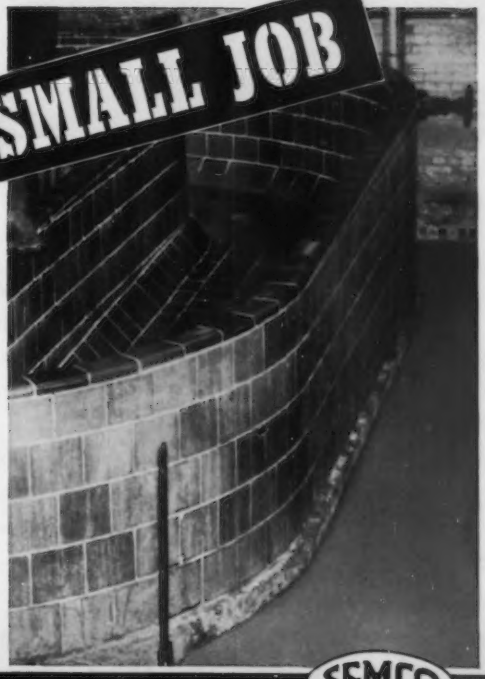
Design, Installation and Maintenance of

LININGS and TILE TANKS

Any job—from the very largest to the smallest—can be installed by Stebbins under a simple contract which covers everything from the original design, which is based on a full knowledge of the chemical, physical and mechanical requirements, to the finished job ready for use. Maintenance can also be included. As proved by the experience of leading mills throughout the country, you can rely completely on Stebbins service.

See Chemical Engineering Catalog or Write for Information

SMALL JOB



SINCE 1884
Specialists in Design Installation and Servicing of Linings and Tile Tanks

SEMCO

STEBBINS Engineering and Manufacturing Company

WATERTOWN, N. Y. • PENSACOLA, FLORIDA

STEBBINS ENGINEERING CORP. — TOWER BLDG., SEATTLE, WASH.

CANADIAN STEBBINS ENGR. & MFG. CO., LTD. — TOWN OF MOUNT ROYAL, MONTREAL 9, CANADA

WET STRENGTH for any type of paper

For practically any paper product—grocery bags, facial tissue, paper toweling, butchers' wrap, or paperboard—you will find that one of these UFORMITE resins will provide the wet strength you need . . . economically and efficiently.

UFORMITE 700 gives high off-the-machine wet strength without attendant broke recovery problems.

UFORMITE 711 offers efficient all-round performance at moderate cost.

UFORMITE 467 provides maximum economy in unbleached grades of paper.

These UFORMITE resins have excellent storage stability. They do not require acid pretreatment or aging before use. Write for our 24-page booklet "UFORMITE Resins for Wet Strength Paper".

UFORMITE is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.

Chemicals for Industry

ROHM & HAAS COMPANY

THE RESINOUS PRODUCTS DIVISION

Washington Square, Philadelphia 5, Pa.

UFORMITE

...In Lighter-Weight Coated Papers...

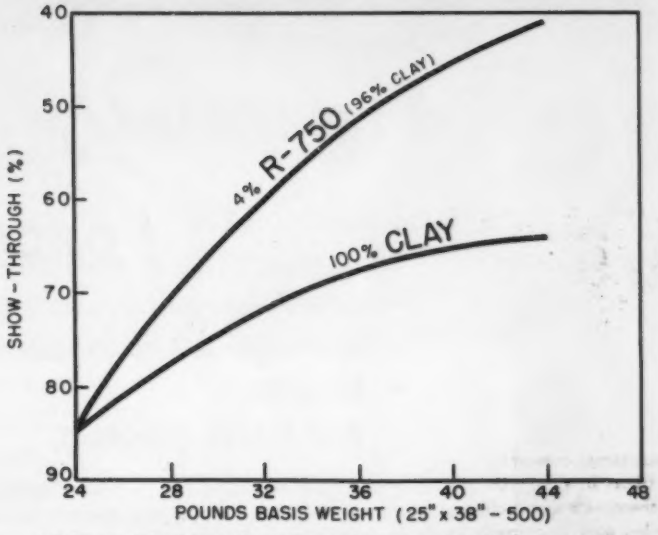
STOP SHOW-THROUGH

with

HIGH OPACITY HORSE HEAD® R-750

(RUTILE)

TITANIUM DIOXIDE



A lighter-weight sheet with greater resistance to show-through can be obtained by replacing only 4% clay with HORSE HEAD R-750 in the coating. The above results were obtained on a 24-lb. base stock coated one side only.

You need only moderate percentages of HORSE HEAD R-750 in your coating to obtain improved show-through resistance at lower basis weight. This means lower mailing costs for your customers.

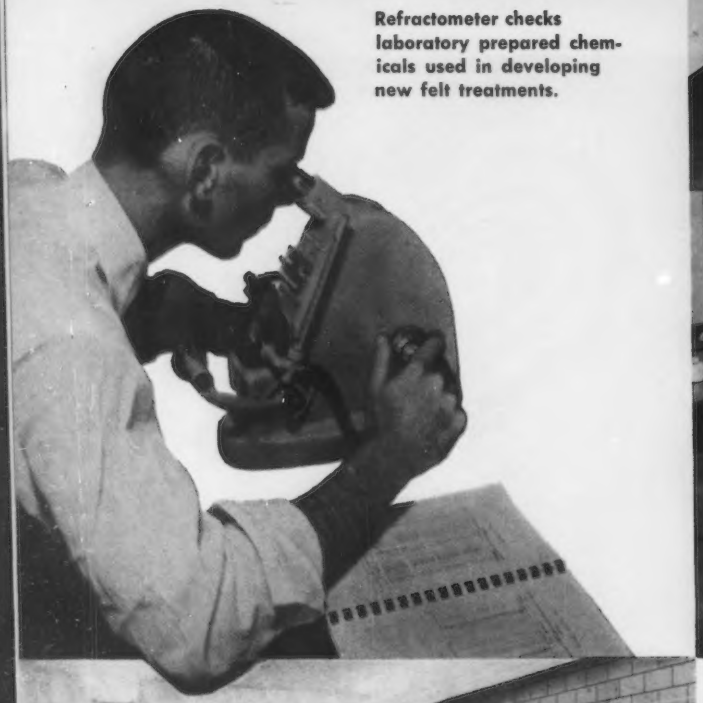
Here's why:

HORSE HEAD R-750, having a rutile crystal structure, has a high refractive index . . . far higher than clay, even higher than anatase titanium dioxide.

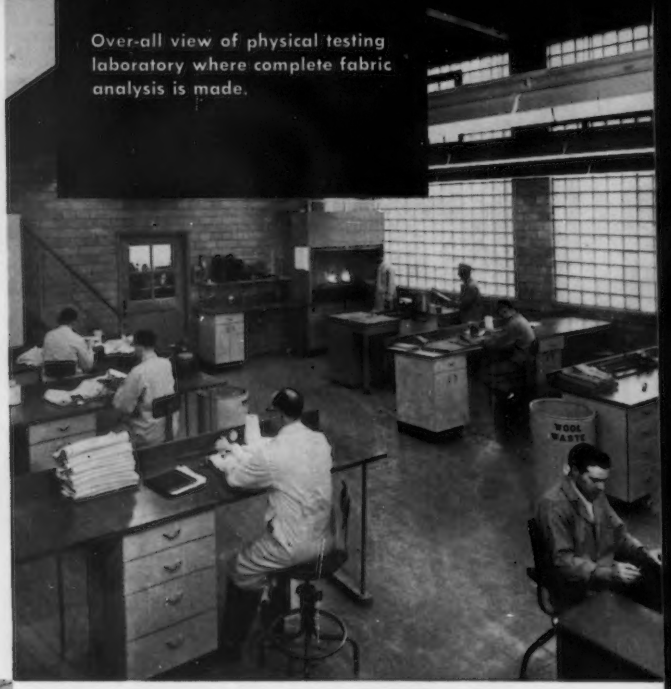
HORSE HEAD R-750 is economical, too. In coated papers it provides more show-through resistance per dollar than anatase titanium dioxide.

HORSE HEAD R-750 is especially suited for use in coated papers of all types. It provides excellent color and brightness, good dispersion, low water demand, good flow properties in coating colors.

THE NEW JERSEY ZINC COMPANY

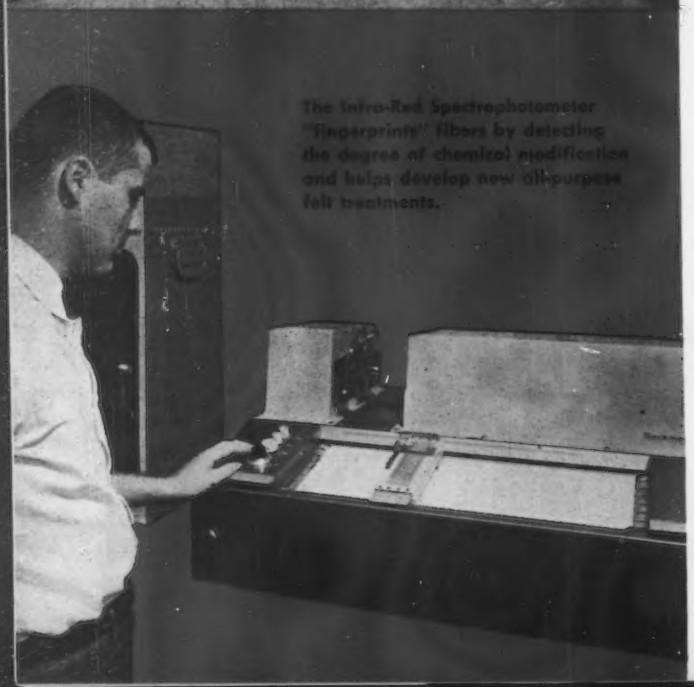


Refractometer checks laboratory prepared chemicals used in developing new felt treatments.



Over-all view of physical testing laboratory where complete fabric analysis is made.

Completely air conditioned for precise testing work, this room houses the large Instron that measures tension and resistance to compression over the range of 0.001 lb. to 2000 lbs.



The Infra-Red Spectrophotometer "fingerprints" fibers by detecting the degree of chemical modification and helps develop new all-purpose felt treatments.

Science center of the felt industry

HERE HUYCK TAKES

TRAINED SCIENTISTS AND ENGINEERS

+ LATEST EQUIPMENT AND FACILITIES

+ KNOWLEDGE AND EXPERIENCE

+ DOLLARS

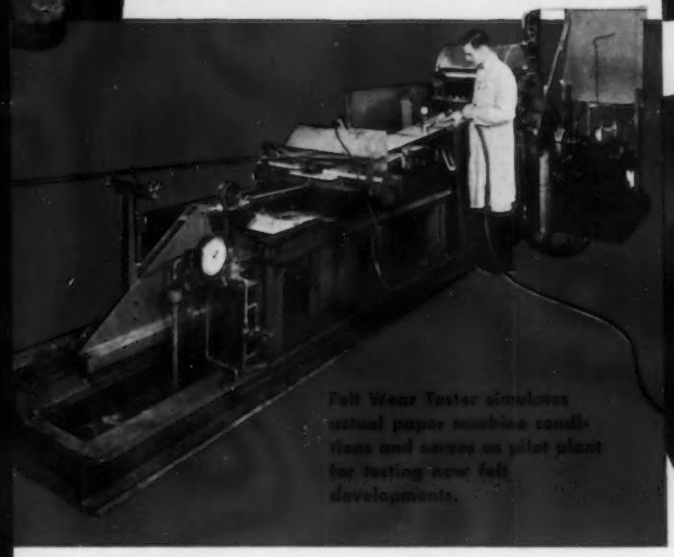
AND MAKES PROGRESS

This is the basic equation for success. The millions of dollars spent each year at this Science Center results in felts that fit better, start-up faster and give longer, more trouble-free life. All-purpose 4-D Treatment and HUYVEL Process for controlling hair shedding and marking are but two of the continuing Huyck developments that mean better felt performance now and in the future.

The instruments, facilities and scientists pictured are in addition to the many devoted exclusively to customer service. They represent Huyck's investment in feltmaking progress that is unsurpassed in the felt industry. You are invited to view these pictures carefully and ask your Huyck Sales and Service Engineers how each device and service can improve your felt operations.

The Vapor Fractometer, the modern tool for performing chromatographic analyses, accurately seeks out types of felt damage.

Fiber diameters are measured with this projection microscope to assure the use of uniform diameter wools.



Felt Wear Tester simulates actual paper machine conditions and serves as pilot plant for testing new felt developments.

One of two Instrons, sensitive instruments used to measure the strength and resilience of felts, yarns and individual fibers.

HUYCK FELTS

Huyck Felt Co.,
Rensselaer, N. Y.;
Aliceville, Ala.;
Division of Huyck Corporation.
In Canada: Kenwood Mills Ltd.,
Arnprior, Ontario.

NEW HUYCK FELTS ★ INDUSTRIAL FABRICS

FIRST IN QUALITY • FIRST IN SERVICE SINCE 1870

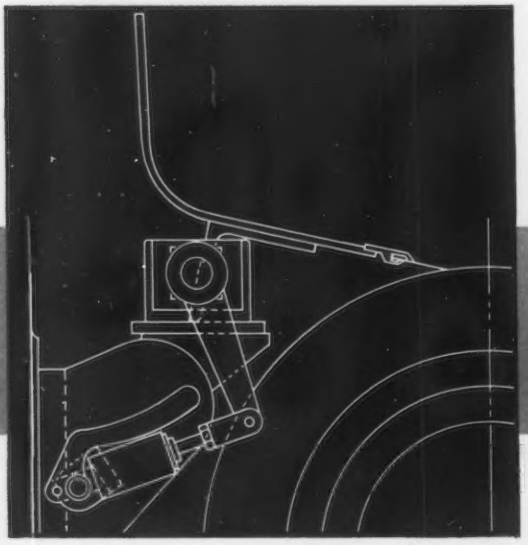
LODDING PRESS DOCTORS are recognized by their ability to remove all water from the roll. Even when running a pond, there is no leakage.

Outstanding performance like this is due to Lodding's specialization in precision doctoring. Every doctor is individually designed for each installation.

Top press roll doctors are no exception. They are engineered to fit accurately and to provide uniform pressure along the entire length of the doctor blade, regardless of the amount or location of broke on the scoop. The scoop itself is fused into the rugged machined surface of the doctor back for added strength. In addition, perfect alignment with the roll axis is assured by mounting the doctor on the press arms, enabling it to ride with the roll, no matter what position the roll takes.

Details like these guarantee the unique dependability of Lodding custom-made doctors in thousands of world-wide applications. Whatever your need for doctors, from Fourdrinier to reel, you can rely on Lodding, the recognized world leader in precision doctoring.

Write, wire or phone Lodding or your nearest sales representative for complete technical information.



LODDING
Engineering Corporation
AUBURN, MASSACHUSETTS

Capital Letters

Business letterheads with the mark of quality are made with Glidden Zopaque® Titanium Dioxide

Clean, crisp-appearing correspondence—the sort that commands attention on a busy desk—is assured when the paper contains Glidden Zopaque.

Zopaque, the whitest white pigment obtainable, combines high hiding power and opacity with ideal mixing qualities. It is readily dispersible and available in a variety of grades for paper formulations.

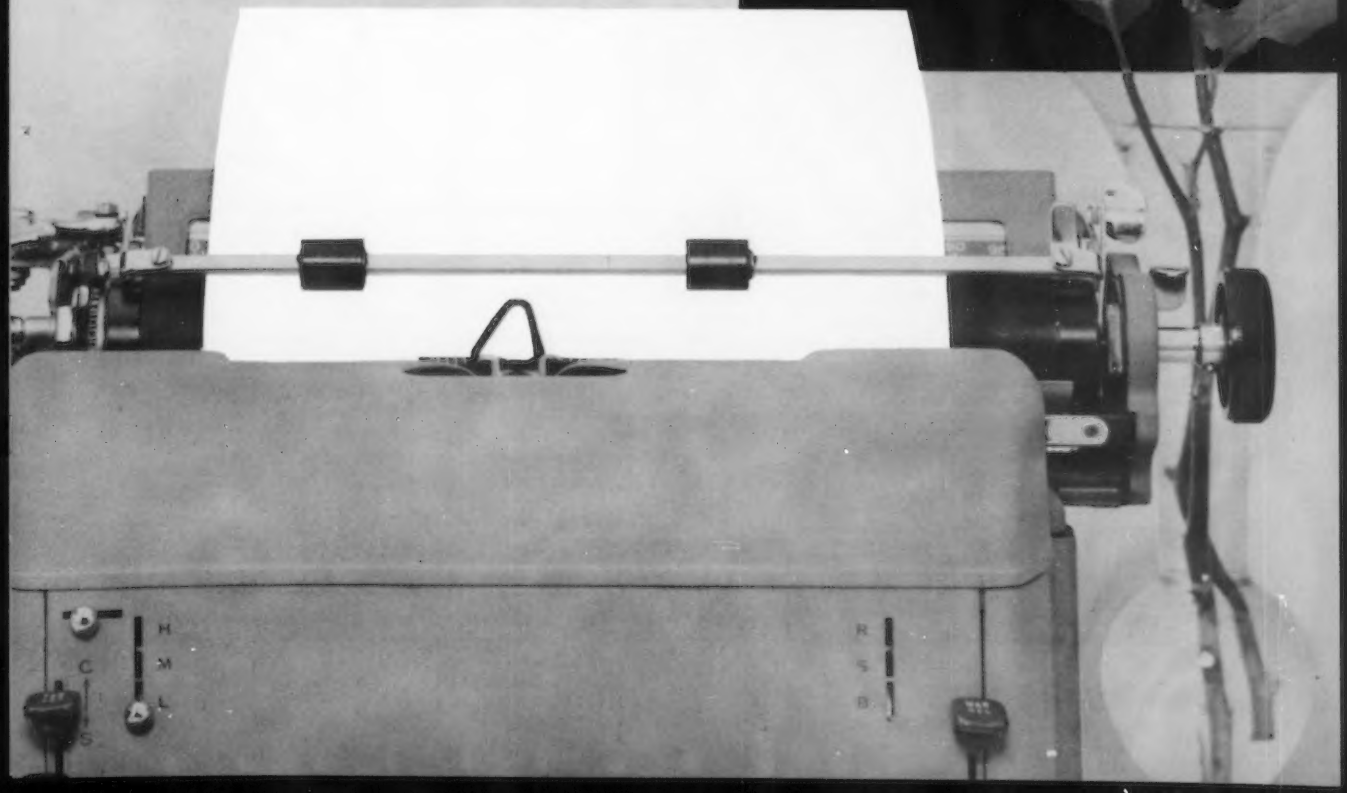
Write now for full information on how Glidden Zopaque Titanium Dioxide can help you in making superior paper products.

QUALITY Glidden PRODUCTS

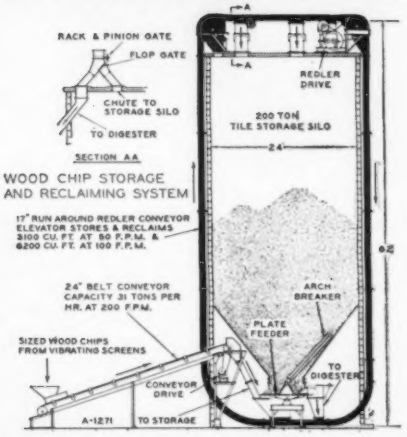
FINEST PIGMENTS FOR INDUSTRY

The Glidden Company
Chemicals—Pigments—Metals Division
Baltimore 26, Maryland

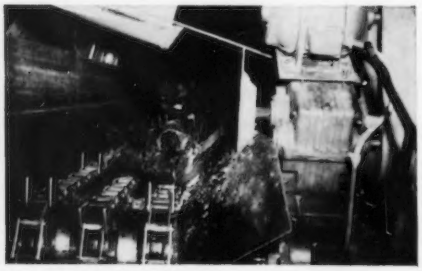
(This advertisement is printed on paper stock containing Glidden ZOPAQUE Titanium Dioxide.)



STEPHENS-ADAMSON

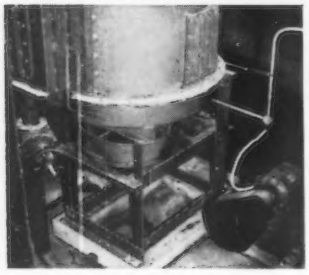

RACK & PINION GATE
FLOP GATE
CHUTE TO STORAGE SILO
TO DIGESTER
SECTION AA
WOOD CHIP STORAGE AND RECLAIMING SYSTEM
17" RUN AROUND REDLER CONVEYOR ELEVATOR STORES & RECLAIMS 3100 CU. FT. AT 80 F.P.M. & 6200 CU. FT. AT 100 F.P.M.
24" BELT CONVEYOR CAPACITY 31 TONS PER HR. AT 200 F.P.M.
SIZED WOOD CHIPS FROM VIBRATING SCREENS
CONVEYOR DRIVE
A-1271
TO STORAGE
REDLER DRIVE
200 TON TILE STORAGE SILO
24'
62'
ARCH BREAKER
PLATE FEEDER
TO DIGESTER

Flow of material diagram above shows a wood chip storage and reclaiming system engineered by Stephens-Adamson.



The S-A triple chain log conveyor picks up logs from a woodyard flume and starts them on their way to the chipper.

EFFICIENT, PROFITABLE LOG & WOOD CHIP HANDLING



The digesters discharge chips into a hopper equipped with a 5-foot diameter two-stage circular bin discharger shown above. Arch-breaker arm keeps chips flowing through discharge outlet.

Arch-breaker arm inside circular bin discharger, above, insures steady flow of chips to REDLER conveyor-elevator.

Over a half century of know-how has been applied by STEPHENS-ADAMSON in engineering and building the most efficient and profitable paper pulp handling systems for storing, reclaiming and conveying to processing. S-A engineering ingenuity is displayed in the efficient handling of logs and wood chips in the paper pulp application illustrated.

From the triple chain log conveyor picking up logs from the woodyard flume to the steady feed insured by the circular bin dischargers at the discharge hoppers of the digesters . . . from the vibrating screen to the vertical closed-circuit REDLER lifting chips 62 feet to discharge points in the silo . . . S-A engineering know-how is applied to save time — cut costs and speed profitable material handling for the pulp and paper industry.

Write for Bulletins 358 and 250

S-A®
ENGINEERED BULK HANDLING SYSTEMS
MATERIALS HANDLING PRODUCTS
SPEEDWALK® PASSENGER CONVEYORS
SEALMASTER® BALL BEARING UNITS
SPHERCO® BEARINGS & ROD ENDS

ENGINEERING DIVISION
STEPHENS-ADAMSON MFG. CO.
GENERAL OFFICE & MAIN PLANT, 42 RIDGEWAY AVENUE, AURORA, ILLINOIS

PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA • CLARKSDALE, MISSISSIPPI
BELLEVILLE, ONTARIO

UNBLEACHED

BLEACHED

ELECTRICAL PULPS

OTHER SPECIALTIES

YOU CAN GET ALL OF THESE SOFTWOOD KRAFT PULPS FROM DRYDEN

We are sure you know about the high quality of Dryden Bleached Sulphate Pulp. But did you know that you can also make Dryden your single source of supply for many other kraft pulps?

Dryden Unbleached–widely recognized for its high tensile strength–for everything from twisting tissues to boxboards.

Dryden Electrical Pulps–tailor-made for cable wrap, transformer board and capacitor tissue.

Dryden's Other Specialties–formulated to meet many unusual requirements. (We produce pulps for anti-tarnish papers, for example.)

We would be glad to make up a single boxcar shipment of several of our pulps for you to try in your own operations.

DRYDEN PAPER COMPANY, LIMITED

DRYDEN, ONTARIO, CANADA

SOLD BY: **Anglo Paper Products, Ltd.**
2055 Peel Street, Montreal 2, Quebec

SALES REPRESENTATIVES IN THE UNITED STATES:

Northeastern Paper Sales, Inc.
400 Madison Avenue, New York 17, N. Y.
20 North Wacker Drive, Chicago 6, Ill.

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PRESKOTE® ROLLS

... are compounded for your particular coating applications

Because every coating operation has its own peculiar set of requirements, every PRESKOTE roll cover is individually designed to do the coating job under your operating conditions. PRESKOTE Rolls offer these important points for more efficient, dependable service:

1. *They can be easily ground and polished.*
2. *They have an exceptionally smooth surface*
3. *They have good resilience, excellent recovery and minimize tail marking.*

STOWE-WOODWARD, INC.

Ask the man from S-W ...

... about the advantages of specifying PRESKOTE covers for your coating rolls. He'll demonstrate how PRESKOTE Rolls are unusually smooth and free of imperfections that might cause trouble during paper coating operations.

PRESKOTE coverings can be furnished in the hardness you require. PRESKOTE covers can be operated safely at temperatures up to 150°F. and are resistant to coating ingredients that are in use today.

STOWE-WOODWARD, INC.

Newton Upper Falls, Mass.
Neenah, Wisconsin
Griffin, Georgia

on the West Coast:
HUNTINGTON RUBBER MILLS, INC.
Seattle, Washington
Portland, Oregon
Port Coquitlam, British Columbia, Canada

Trends

Paper and Board Production Up 7.8%

Paper and board production in the first two months was 7.8% ahead of the same period last year, according to preliminary data compiled by APPA. Details are shown below.

	1960			1959	
	Jan.	*Feb.*	*2 Mos.*	*2 Mos.*	*% Change*
Paper	1,320	1,270	2,590	2,359	+9.8
Board	1,317	1,330	2,647	2,485	+6.5
Bldg. Paper and Board	254	250	504	480	+5.0
Total	2,891	2,850	5,741	5,324	+7.8

NOTE: Data is in 000's of short tons.

Fine and Wrapping Paper Sales Up

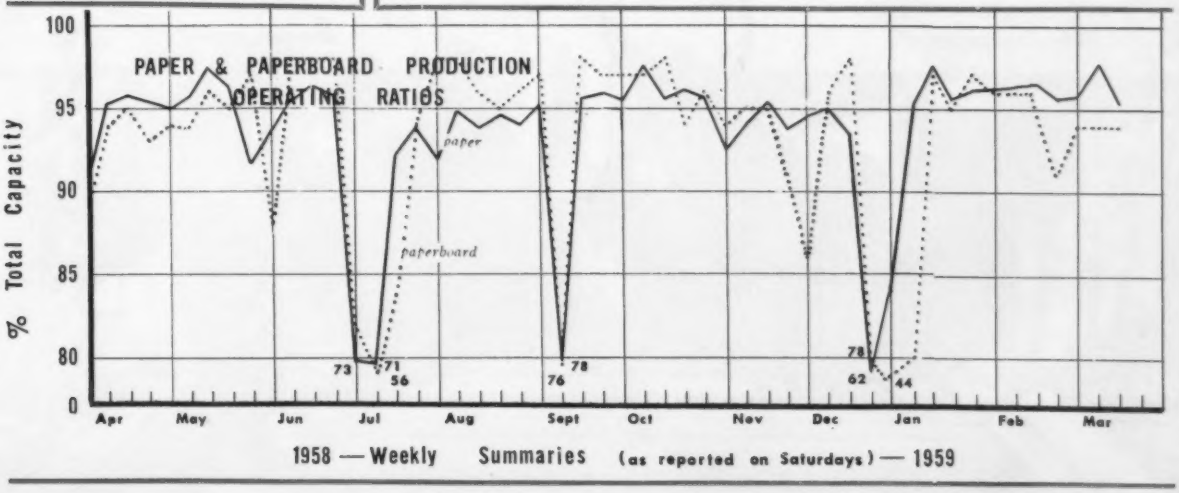
Sales of fine paper in February were 4.3% above January, according to NPTA. This was in contrast to the normal decrease of 6% for February. Compared to February 1959 fine paper sales were 10.1% higher—pushing the two month totals to 7.2% above the corresponding period last year. Although February wrapping paper sales were 0.7% below January, strong activity was evident by comparison with the normal 4.9% decrease from January to February. Volume ran 6.9% above February 1959 with totals for the first two months of 1960 at 4.9% ahead of last year.

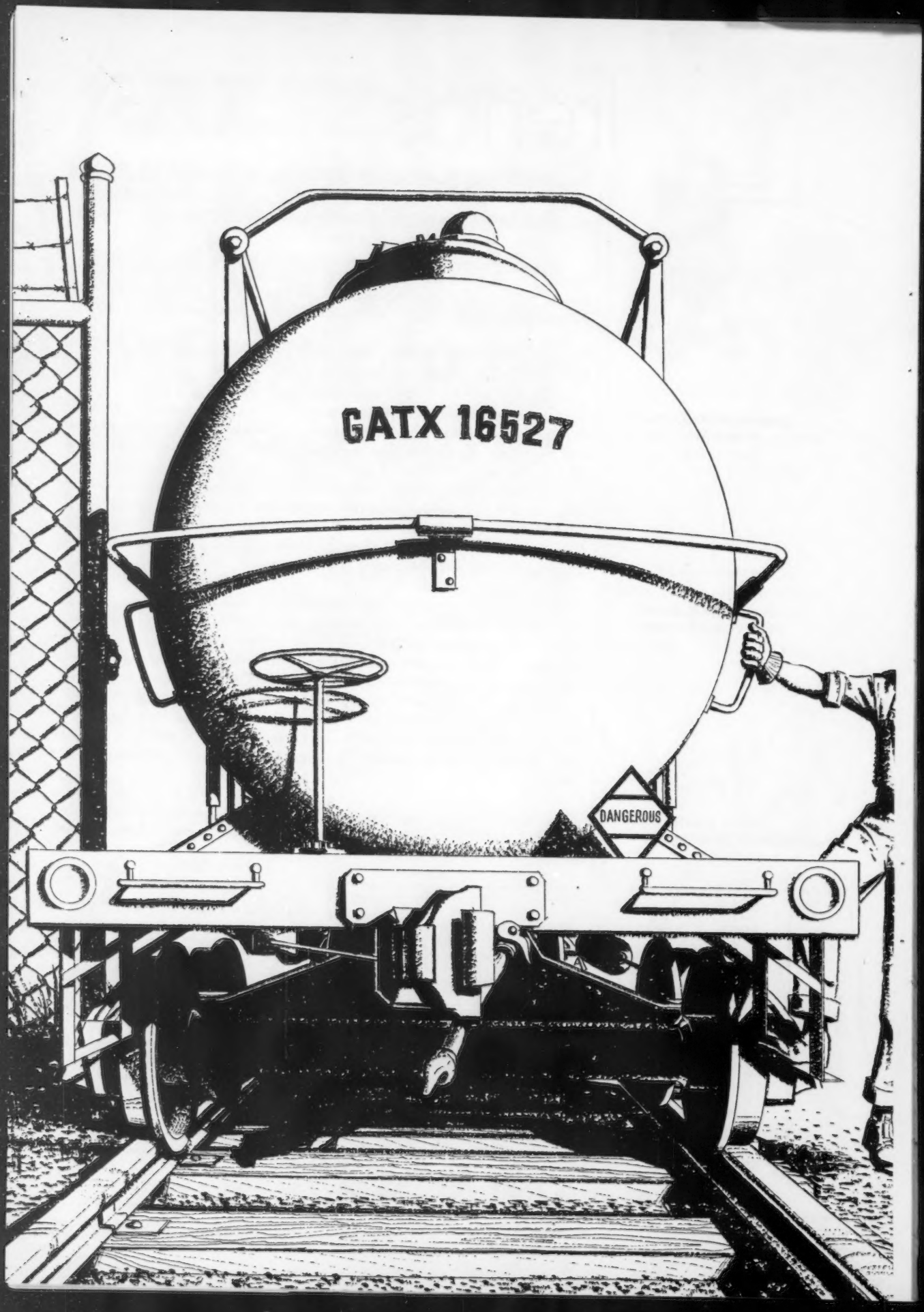
Expanding Exports Can Grow Further

The U. S. pulp, paper and paperboard industry, whose export business amounted to $337 million in 1959, is confident that this trade will continue to grow, if freer access to foreign markets is obtained. This was brought out recently when representatives of the industry conferred with the U. S. Dept. of Commerce on actions the Government might take to boost our exports. Spokesmen said that our industry now encounters numerous discriminatory practices in world trade and is concerned that new difficulties will arise as the result of the development of European regional trade blocs.

Most Significant Papermaking Development

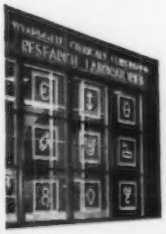
This issue contains three special reports on something completely new, a synthetic fabric to replace bronze wires on the fourdrinier section of paper machines.




GATX 16527
DANGEROUS

The vital chemical reaction . . . customer confidence

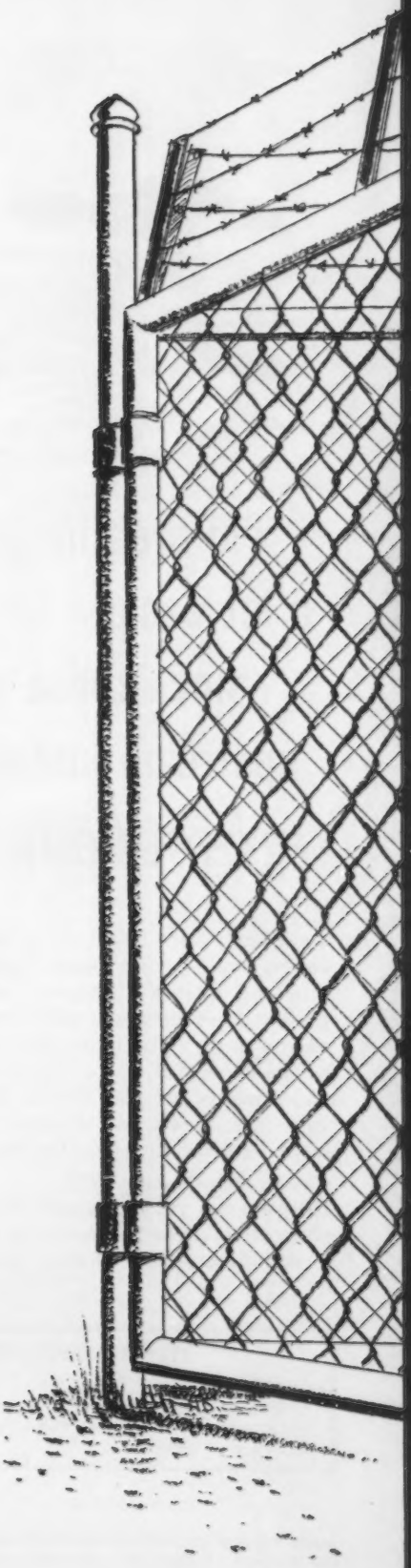
Order delivered. Responsibility ended? Not as we see it. If a customer has a caustic storage problem, we help him work it out. If his employees need instruction in the proper handling of chlorine, we offer this instruction. For, to us the business of a chlorine-caustic producer is by nature part science, part service. This explains much of what we do. It is why, though we are producers of raw-material chemicals, we duplicate in our laboratories the manufacturing processes that involve them. It is why we make it our business to understand yours as fully as possible. Going beyond our required responsibilities whenever we can be of help is a fixed habit at Wyandotte, and it has earned for us that vital chemical reaction . . . the confidence of our customers. May we serve you? *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

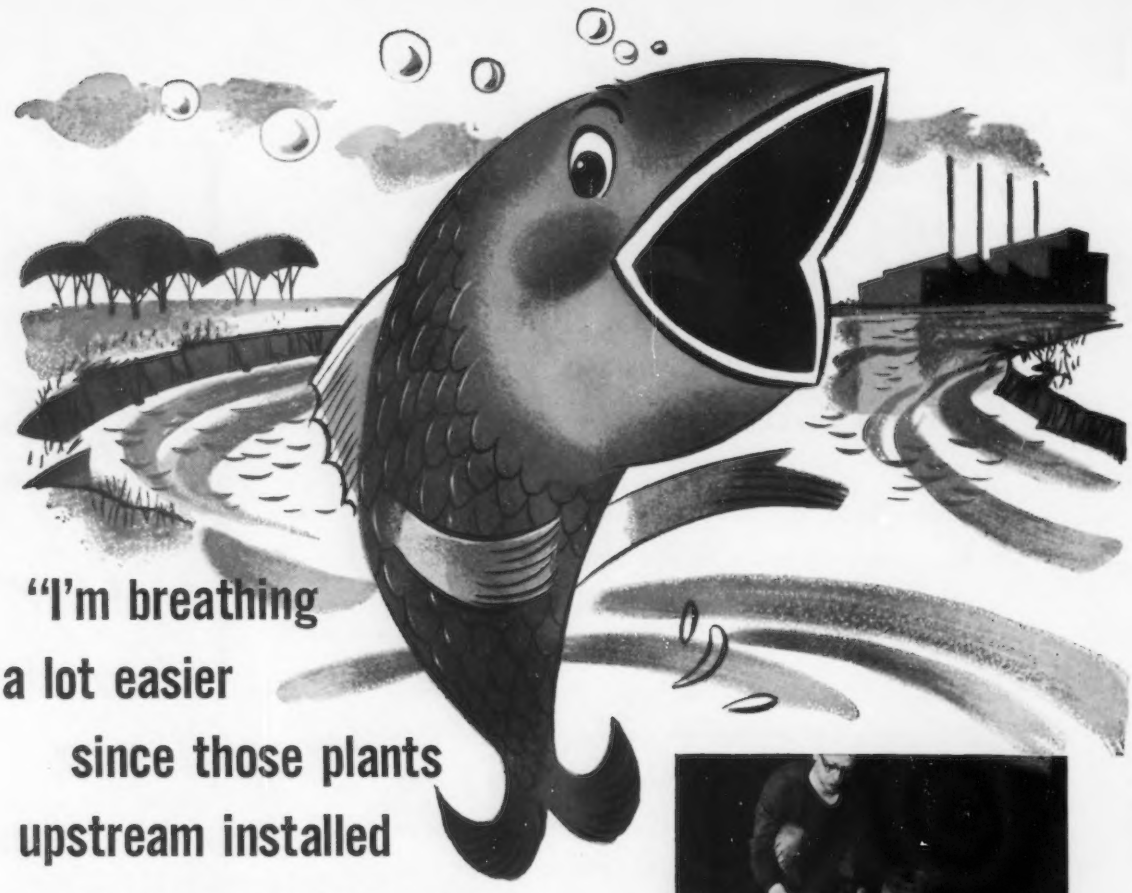


WYANDOTTE CHEMICALS

MICHIGAN ALKALI DIVISION

Pacing progress with creative chemistry®





"I'm breathing a lot easier since those plants upstream installed RYERTEX-OMICRON PVC"

And the plants he's talking about are breathing easier, too. They've found Ryertex®-Omicron PVC pipe and fittings a long-term answer to corrosion problems in their waste-acid systems. And it's a vital answer too—since more and more states require neutralization of waste before disposal into rivers and streams. If you have a disposal problem in your mill, here's how Ryertex-Omicron PVC can solve corrosion problems for you.

Why Ryertex-Omicron PVC?

Lightweight, yet tough and durable, this remarkable plastic fights 281 corrosive solutions and gases —including acids, alkalies, waste products, etc. Time-tested by 20 years of varied applications, it resists weathering, rotting and aging indefinitely.

With more and more states insisting upon treatment of acid waste before disposal, it may pay you to investigate all the advantages of Ryertex-Omicron PVC in your piping systems. Contact your nearby Ryerson Industrial Plastics specialist for complete information.

TYPICAL APPLICATIONS

Pickling tanks, blowers, fan housings, fume systems, drainage systems, receiving tanks, neutralizer acid equipment, small evaporators and crystallizers, mother liquid tanks, centrifuge baskets, rotor cones.

INDUSTRIAL PLASTICS AND BEARINGS DIVISION

RYERSON STEEL®

Joseph T. Ryerson & Son, Inc., Member of the INLAND® Steel Family

PLANT SERVICE CENTERS: BOSTON • BUFFALO • CHARLOTTE • CHICAGO • CINCINNATI • CLEVELAND • DALLAS • DETROIT • HOUSTON • INDIANAPOLIS LOS ANGELES • MILWAUKEE • NEW YORK • PHILADELPHIA • PITTSBURGH • ST. LOUIS • SAN FRANCISCO • SEATTLE • SPOKANE • WALLINGFORD

PJT | PAPER TRADE JOURNAL
WEEK OF APRIL 4, 1960

River Raisin Paper Holders Approve Union Bag Merger

Stockholders of River Raisin Paper Co. of Monroe, Mich., approved merger of the company into Union Bag-Camp Paper Corp. of New York.

Charles L. Wood, River Raisin president, said 99.3% of the stock represented at the meeting voted for the merger plan, and that more than 90% of the company's outstanding stock was represented at the meeting.

The merger plan now will be voted on by Union Bag stockholders at their annual meeting April 12.

Under the merger plan five shares of Union Bag stock would be exchanged for six shares of River Raisin. River Raisin has 463,215 shares outstanding.

IP Forms Paper-Plastic Sales Division

A new division, the Paper-Plastics Sales Division, has been formed by International Paper Co. to coordinate sales activities in this field. The new division will be headed by J. L. DeRose, division sales manager, who will headquarter in New York.

For some years International Paper's Niagara Falls mill has been successfully combining plastics with various grades of paper and paperboard to provide special characteristics for particular end uses. In November 1959 a much larger unit, especially designed for this purpose, was put into operation at the Mobile mill.

Mr. DeRose joined International Paper in July, 1952. He will be assisted in his new assignment by C. J. Sewell, R. W. Emery, D. M. Sullivan, E. C. Leavy and E. R. Pardo.

Power and Water Service for Menasha

Preliminary designs for a power transmission line across Coos bay and installation of three additional fresh-water wells in the sand dunes north of the bay to serve the Menasha Wooden Ware Co.'s first Oregon pulp and paper mill are in progress.

The area has long had a large amount of wood residue available from timber-based industries, but lacked a suitable economic fresh water supply to make the pulp-paper expansions feasible. Menasha's plant is the first outgrowth of its successful quest for a water supply in the 13,000 acre dune area north of the bay.

Calcasieu Now Producing Clupak Paper

Calcasieu Paper Co. of Jacksonville, Fla., one of the twelve paper companies having license agreements with Clupak, Inc. to make CLUPAK extensible paper, has just begun production of the new paper.

Installed on its No. 3, 162-inch wide machine, at its Elizabeth, La. plant, Calcasieu's new extensible unit has the capacity to produce a wide variety of kraft papers at the rate of approximately 150 tons a day.

Rise in Sales of Printing And Industrial Papers Seen

Paper merchants can expect a five to 10 per cent increase in sales of printing and industrial papers this year, Floyd H. Blackman, president of the National Paper Trade Ass'n., stated at the group's annual convention.

"Surveys indicate," he said "that the mills plan to invest an unprecedented $120 million in new plant and equipment in 1960—a 216 per cent increase over the $38 million invested in expansion in 1959."

The N.P.T.A. official reported that distribution sales of printing and industrial papers last year reached a new high of $3,176,327,000 and forecast a record $3,400,000,000 in 1960.

Gulf Fibre Plant Orders Steel

Orders have been placed here for structural steel to be used in Port St. Joe's new $13.5 million Florida Gulf Fibre NSSC pulp mill and corrugating medium plant, it was announced by St. Joe Paper Co. last week.

Size and date of the steel shipment to Port St. Joe will be announced after drafting plans are completed for the mill to be built in Port St. Joe. Construction will begin sometime this year.

Strathmore To Install New Woronoco Power Plant

The Strathmore Paper Co. of West Springfield, Mass., is installing a new $1.3 million power plant to provide electricity and steam for its two paper mills in Woronoco.

Paper and Paper Board Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending March 19, 1960, at 95.3 per cent compared with 97.5 per cent, revised for the preceding week. The ratio was 94.1 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paperboard production ratio for the week ending March 19, 1960, at 94 per cent, compared with 94 per cent for the preceding week and 94 per cent for the corresponding week a year ago.

(Detailed statistics on page 59)

ASSOCIATION NEWS

Pulp & Paper Instrumentation Symposium

The Pulp and Paper Division of the Instrument Society of America announces that the First Pulp and Paper Instrumentation Symposium will be held at Pensacola, Fla., April 27-29, 1960. The symposium will be held concurrently with the Sixth Southeastern ISA Conference and Exhibit and the program will be as follows:

WEDNESDAY, APRIL 27

Keynote Address—W. F. Gillespie, The Bogalusa Division, Crown Zellerbach Corp.

"Untapped Instrumentation Philosophies"—Earl M. Seagrave, Jr., Technical Consultant, Celanese Corp. of America.

WEDNESDAY, APRIL 27

"Application of Instrumentation in Tomorrow's Pulp Mill"—Dr. William J. Nolan, University of Florida.

"Flow and Consistency Measurement and Control of Pulp Stock"—Donald B. Scrivens and Robert H. Zielske, Taylor Instrument Co.

"Automatic Control of Multi-fuel Bark Boilers"—James M. Ennis, Jr., Union Bag-Camp Paper Corp.

"Lime Mud Flow Control and Effect on Kiln Operation"—R. R. Gardner, Buckeye Cellulose Corp.

THURSDAY, APRIL 28

"The Future of Electronic Instrumentation in the Paper Industry"—E. Andrews, Instrument Supervisor, Container Corp., Fernadina Beach, Fla.

"Automatic Control of Water Treatment and Filtration"—H. Peterson, Weyerhaeuser Co., Longview, Wash.

"Application of Stock Consistency Regulation Equipment"—N. L. Danforth, St. Regis Paper Co., Bucksport, Me.

Lunch at St. Regis Paper Co. and Mill Visit—Sponsored by St. Regis Paper Co.

FRIDAY, APRIL 29

Panel Discussion, "Instrumentation Needs to be Met in the Pulp and Paper Industry."

Panel Moderator: William G. Gray, Jr., St. Mary's Kraft Corp., St. Mary's, Ga.

Panel Members: R. Owens, North Carolina Pulp Co.; G. Charters, Bechtel Corp.; D. Spitz, Champion Paper & Fibre Co., Pasadena, Tex.; G. Eastwood, Kimberly Clark Corp., Neenah, Wis.; G. Seymour, Brunswick Pulp and Paper Co.

TAPPI 11th Coating Conf. Program

The Eleventh Annual TAPPI Coating Conference will be held at the Edgewater Beach Hotel, Chicago, Ill., May 23 through 25.

The complete program has been announced by the general chairman of the conference, R. W. Hagemeyer, Wyandotte Chemicals Corp. R. W. Martinek, Kimberly-Clark Corp., Neenah, Wis., is the technical program chairman. C. W. Cairns, The Dow Chemical Co., is the local arrangements chairman.

The program offers five major technical sessions on various aspects of coating with a number of materials, with a total of 14 technical papers to be presented. One of the highlights will be an additional special panel symposium "Coating for Printing." The Coating Conference is being co-sponsored by the TAPPI Graphic Arts Committee.

The Annual Luncheon of the Coating Conference has as its guest speaker B. Cremers, vice president, Wyandotte Chemicals Corp.

Several plant trips are also offered as part of the program, including the following: Corn Products Co., Argo Plant, Chicago, Ill.; Rand McNally Co., Skokie, Ill.

The program will be as follows:

MONDAY, MAY 23

"New Surface Sizing Technique with Polyvinyl Alcohol"—B. A. Beardwood and E. P. Czerwin, E. I. DuPont De Nemours and Co.

"Coating Polymers for Paper Products"—W. L. Boyer, Firestone Plastics Co.

"European Approach to Printability Research"—M. C. Rogers, Chicago Paper Testing Laboratory.

"New Developments in Offset Printing"—M. Bruno, Lithographic Technical Foundation.

"The Effect of Pigment Binders on Paper Gloss, Printed Gloss and Oil Absorption"— R. E. Weber, Kimberly-Clark Corp.

"The Effect of Mixing Intensity on the Dispersion of Coating Pigments in Water"—N. Millman and J. B. Whitley, J. M. Huber Corp.

TUESDAY, MAY 24

Panel Symposium—"Coating for Printing" H. H. Lavery, International Paper Co., Corinth, N. Y., Chairman. Walter W. Roehr, Kimberly-Clark Corp., Neenah, Wis., Moderator.

Graphic Art Panelists: "Coated Board Printing"—L. R. Ayers, Continental Can Corp., "Offset Printing"—Charles H. Borchers, Lithographic Technical Foundation, Inc.; "Rotogravure Printing"—Frederick W. Goetz, Publication Corp.; "Letterpress Printing"—Marvin C. Rogers, Chicago Paper Testing Lab.

Coating Panelists: "Letterpress and Rotogravure Printing"—Philip C. Evanoff, The Mead Corp.; "Offset Printing"—Alger P. Reynolds, S. D. Warren Co.; "Coated Board Printing"—Willard I. Stinger, Marathon Div., American Can Corp.

WEDNESDAY, MAY 25

"Electrostatic Coating Process for Making Flat Gummed Paper"—F. W. Holt and C. L. Lorenz, Brown Bridge Mills, and R. B. Reif, Battelle Memorial Institute.

"Design and Operation of Pilot Plant Coaters"—E. D. Jones, Crossett Paper Mills, and N. H. Laughrey, Black-Clawson Co.

"A Method to Determine the Degree of Web Rub Resistance"—F. R. Adams, International Paper Co.

"Operating Variables of a Blade Coater"—W. J. Follette and R. W. Fowells, Crown Zellerbach Corp.

"The Champflex Coater"—C. G. Whelpton, Champion Paper and Fibre Co.

"A new Precision Technique for measurement of Coating Thickness"—H. H. Murray, Georgia Kaolin Co., and W. D. Johns, Washington University.

"A Laboratory Instrument for Measuring the Piling Propensity of Papers Used in Offset Lithography"—Frank F. Oehme and Don C. Nepper, Consolidated Water Power and Paper Co.

"Pressure Cooking for Coating Color Preparation"—W. C. Black and V. L. Winfrey, Penick and Ford.

PAPER PEOPLE

CP&F Management Posts Temporarily Reassigned

Temporary reassignments in top management posts at The Champion Paper and Fibre Co., following the recent election of Dwight J. Thomson as chairman of the board and Karl R. Bendetsen as president, have been announced by Mr. Bendetsen.

Leo Geiser, formerly vice president and general manager, Ohio Division, will serve as acting group executive, operations group. This position formerly was held by Mr. Bendetsen.

Earl Jones will be acting Ohio Division manager during Mr. Geiser's assignment to the general office post.

Benjamin V. Wright, vice president, finance, has been assigned additional duties as acting group executive, converting products group. This position had been held by Mr. Thomson.

Mr. Bendetsen, in addition to his job as president, will fill the position of executive vice president, printing products group.

Jamison Resigns Post At Oxford Paper

Andrew M. McBurney, vice president, sales, announces that he has accepted with regret the resignation of Walter Jamison, order processing manager, effective May 1.

Strathmore Promotes Two On Technical Sales Staff

Strathmore Paper Co. has announced the appointment of Robert L. Fastie as assistant manager of technical paper sales and Charles Babinski as technical sales assistant. Both men will assist Peter G. Volanakis, manager in technical sales and development work.

Mr. Fastie had been marketing manager of Grant Photo Products of Cleveland, Ohio, and was previously connected with the E. I. duPont Photo Products Department as a technical sales representative.

Mr. Babinski has been a Strathmorean for 11 years, with experience in the shipping room, quality control department and as a scheduling clerk in the order department.

K. R. Meyer

Meyer Rejoins Stadler Hurter

A. T. Hurter, president of Stadler Hurter International, Ltd., Montreal, consulting engineers, has announced that K. R. Meyer, has rejoined the company in the capacity of project manager.

Mr. Meyer was formerly chief engineer for the E. B. Eddy Co., Hull, Quebec. Before joining the Eddy company in 1949, Mr. Meyer had been associated with Stadler, Hurter & Co. for a three-year period.

Westvaco Elects New Director

John A. Luke, manager of the Fine Papers Division of West Virginia Pulp and Paper Co., was elected to the company's board of directors.

He succeeds William G. Luke of Pelham, N. Y., who has reached the mandatory retirement age. Fifteen other members of the board were re-elected at the meeting.

Westfield River Paper Elects Sales V-P

Robert R. Ackley of Longmeadow, Mass., has been elected to the office of vice president in charge of sales, by Westfield River Paper Co., Inc., Russell, Mass.

The company, whose home office is at Russell, Mass., has mills at Russell and Lee, Mass., and West Conshohocken, Pa., and is one of the leaders in its field, manufacturing a complete line of glassine, greaseproof and laminated papers used extensively in the packaging field, and in specialized industrial applications.

Mr. Ackley joined Westfield River in April 1957, coming from the Quaker Chemical Products Co., Conshohocken, where he served as vice president of sales.

C-Z Announces Personnel Changes

Crown Zellerbach Corp. has named Gerald Baulig associate engineer and Gerald Gronley mechanical engineer in the central engineering office, Seattle, Wash.

Mr. Baulig previously was with Reichhold Chemicals Inc., Seattle, as an engineer. Mr. Gronley was a project engineer for W. C. Nickum & Sons Co., Seattle.

Howard Becker, purchasing supervisor, Camas, has been promoted to assistant director of purchases, Portland office; Fran Dowdy, assistant purchasing supervisor, Camas, to purchasing supervisor; Richard Loyst, purchasing supervisor, St. Francisville, to assistant purchasing supervisor, Camas; and Robert Olds, senior purchasing clerk, Camas, to purchasing supervisor, St. Francisville.

Crocker, Burbank Promotes Tenander

Crocker, Burbank Papers, Inc., announces the promotion of Tuure Tenander, to vice president in charge of sales of the company's Converting Paper Division, and of Malcolm McVickar, vice president in charge of sales of the Duplicating Papers Division. In addition, two new directors, Donald M. Crocker and Bartow Kelly, were elected.

Mr. Tenander graduated from the University of Michigan in 1938 and came with Crocker Burbank in 1939.

Mr. McVickar attended Harvard and Columbia colleges, graduating from the Columbia College School of Business in 1938. He joined Crocker Burbank as a salesman of polyethylene coated papers, and other industrial specialty papers. Subsequently, he moved into the Duplicating Papers Division; first, as salesman, then sales manager, and now as vice president.

For the past two years Mr. McVickar has been chairman of the Polyethylene Extrusion Coaters Group of the Specialty Paper & Board Affiliates.

Scott Moves Haug To Chester Post

A. J. Haug, paper mill manager for Scott Paper Co., Everett, Wash., has been promoted to the position of manager of production services in the corporate staff at the company's headquarters office at Chester, Pa.

Mr. Haug will be succeeded by Robert E. March, who for the past several years was manager of the Coos Bay Pulp Corp. mill at Empire, Ore., a Scott subsidiary.

IP Announces Series of Promotions

Three promotions have been made at the headquarters of the Southern Kraft Division of International Paper Co.

Those promoted are: Thomas H. Smith, from technical director of the Mobile mill, to division assistant coordinator of business papers; James M. Smith, from assistant paper mill superintendent at the Mobile mill, to division assistant coordinator of news and groundwood specialties; and H. Minge Reed, Jr., from plant engineer at the company's mill in Springhill, La., to division coordinator of maintenance.

Thomas Smith replaces Frank P. Shearer who was recently named technical director of the company's Louisiana mill in Bastrop, La.

James Smith is from Tuskegee, Ala., and a graduate of Auburn University in chemical engineering. He has worked for International since 1947 when he became an engineering trainee at the Mobile mill.

Also announced were promotions at the IP Mobile mill. The departments effected are production, technical, U.M.E., and the paper mill.

Joel R. Baker, former bleach plant superintendent at the Mobile mill from 1939 until 1947, will return as production superintendent. Mr. Baker will transfer from the company's Georgetown mill where he was technical director.

Promotions in the technical department resulting from the transfer of T. H. Smith include L. J. Trahan to technical director and M. White, formerly chief chemist to the newly created job of technical superintendent.

T. Bartley, former plant engineer, Mobile mill, has been promoted to assistant U.M.&E. superintendent.

R. B. Smallwood, former tour foreman was promoted to second assistant paper mill superintendent. W. Noblitt, also a former tour foreman, was promoted to second assistant paper mill superintendent.

E. Havard and L. W. Jacobs were promoted from machine tenders to tour foremen to fill the vacancies left by Messrs. Smallwood and Noblitt.

C. K. Brett

Continental Can Names Market Development Mgr.

Charles K. Brett has been appointed manager of market development for folding cartons in the Boxboard and Folding Carton Division of Continental Can Co. He will be located in the division's New York headquarters.

Mr. Brett, who was formerly assistant manager of market development in the company's head office, will now be responsible for finding and defining major folding carton market opportunities and developing marketing plans to exploit these opportunities. He will also coordinate the marketing aspects of new product development in folding cartons and will supervise market and consumer research.

Harrower Retires; Linton Names Beckwith President

Norman Harrower, president of the Linton Brothers division of the Crocker Burbank & Co. Assc'n. for 45 years, has retired from that position. He will remain with the company as a director, however.

Mr. Harrower is succeeded as president of the company by Ralph M. Beckwith, president of Crocker, Burbank since 1938 and a vice president of the Crocker Burbank & Co. Assc'n.

The paper firm also announced that the Linton Brothers & Co., Inc. division will immediately assume marketing responsibility for all commercial printing paper grades sold through the wholesale paper merchant. The new unit will be known as Crocker Burbank Papers, Inc., Linton Brothers Division. The basic sales policies remain unchanged.

Under Mr. Beckwith the program will be in charge of John C. Stevens, vice president and general manager, and Roger J. Clapp, vice president and sales manager assisted by John B. Andrews and R. Thomas Reed, Jr., all operating out of the main office in Fitchburg.

Keep your eye on our Classified Advertising Section

Champion Adds to Research And Development Staff

Six new men have joined the Research and Development Division of The Champion Paper and Fibre Co.'s office in Hamilton, Ohio.

The new men are: C. P. Donofrio, manager, pulp research and development; Donald Hoes, Jr., patent attorney; David Nowak, research engineer, coating department; Ned Downs, associate research engineer, engineering department; George Morley, senior draftsman, engineering department; and Robert Connaughton, senior draftsman, engineering department.

Mr. Donofrio is a graduate of the New York University College of Forestry and has taught there for 20 years.

Mr. Hoes, a native of Cincinnati, was graduated from the University of Cincinnati.

Mr. Nowak was born in Alpena, Mich., and was graduated last year from the University of Michigan with a Bachelor of Science degree in packaging.

Mr. Downs, a native of Columbus, Ohio, is a graduate of Ohio State University with a degree in mechanical engineering. Before joining Champion he did engineering work with General Electric Co., Gruen Watch Co. and Allstate Engineering Co.

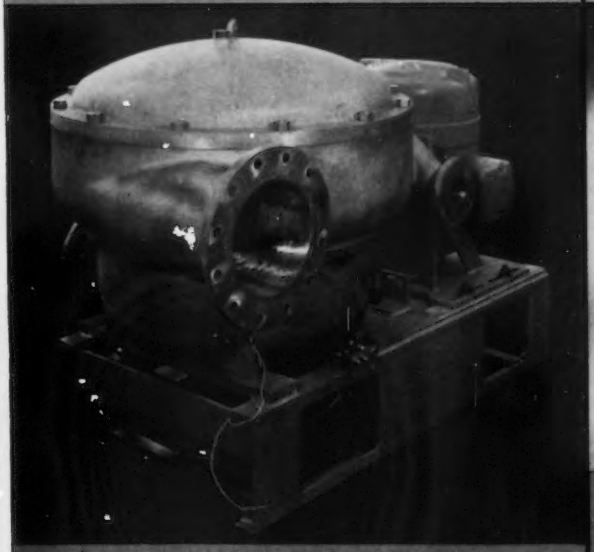
Mr. Morley, born in Philadelphia, Pa., attended the Drexel Institute of Technology. For the past five years he has been a project engineer with the Paper Machine Division of the Black-Clawson Co., Watertown, N. Y.

Mr. Connaughton, a native of Hamilton, was graduated from Hamilton Catholic High School and attended the University of Cincinnati Evening College. Before joining Champion he worked as a draftsman and designer for the Black-Clawson Co. and Baldwin-Lima-Hamilton Corp.

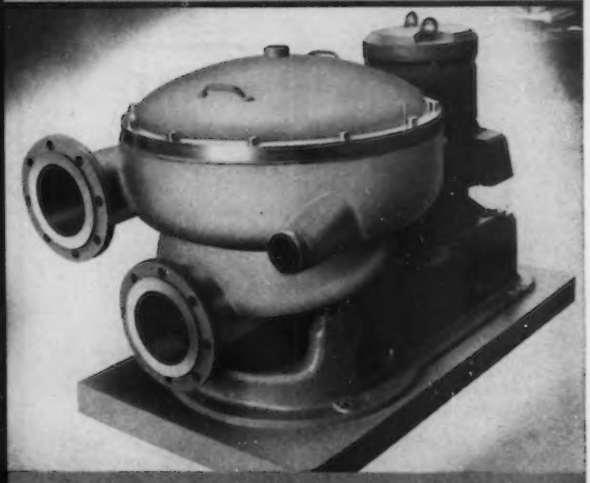
NOW, 3 Sizes of BIRD CENTRISCREENS

— one of which will do a better screening job on *your* stock and *your* tonnage at *lower screening cost per ton*

The **Model 14** Centriscreen is the pressure screen that has proved so popular, effective and economical ahead of big, high speed paper machines handling all kinds of stock. It handles feeds up to 5600 gpm or more, depending on stock character and consistency.



The **Model 10** Centriscreen is the pressure screen for handling approximately half the volume of the Model 14 — sometimes more on certain kinds and grades.



The new **Model 6** Centriscreen is the pressure screen for small Fourdriniers and for one screen per mold on cylinder machines. Only 30 inches high and 34 inches wide it delivers up to 1200 gpm. It possesses the superb dirt and shive removal efficiency and exceptional operating and maintenance economy of the larger models.

BIRD MACHINE COMPANY

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Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

PJT NEWS OF CONVERTERS

J. W. Luce

O-I Multiwall Bag Div. Names Assistant Manager

John W. Luce, veteran industrial engineer, has been appointed assistant to Tom W. Brown, Jr., division manager of the Multiwall Bag Division of Owens-Illinois Glass Co.

Mr. Luce will direct research and new product development, Mr. Brown announced. This will include work on improvements in customer's material handling methods and development of new types of flexible packaging to meet customer needs.

Folding Paper Box Ass'n. Names Forsberg President

D. A. Forsberg, president of Forsberg Paper Box Co., Madison, Wis., was named president of the Folding Paper Box Ass'n. of America. His election took place at the concluding session of the association's annual meeting at the Ambassador hotel, Los Angeles.

Mr. Forsberg succeeds J. N. Andrews, executive vice president, Packaging Corp. of America, Evanston, Ill.

New members of the association's executive committee are Herbert C. Bernard, president, Shuttleworth Carton Co., New York; Bayle M. Richardson, chairman of the board. The Richardson Taylor-Globe Corp., Cincinnati, Ohio; Ralph Schnitzer, president, Magnolia Carton Co., Houston, Tex., and Charles B. Stauffacher, executive president, Continental Can Co., Inc., New York.

IP Firm Opens Bag Research Laboratory

A new laboratory devoted to research and product development has just been opened by the Bagpak Division of International Paper Co. in Camden, Ark.

The laboratory, which is under the direction of R. L. Reeves, technical director, will be devoted to solving multiwall packaging problems and developing new uses for multiwalls.

Davis Paper Box Elects Officers

The S. H. Davis Paper Box Co., Toledo, Ohio, has elected Louis F. Middlesworth president and Howard J. Franklin vice president and treasurer. Mr. Middlesworth succeeds Stanley H. Davis who died February 29.

Leon Miller will continue as corporate secretary.

REQUIRED IMMEDIATELY

FOR

NEW PULP MILL IN BRITISH COLUMBIA

TECHNICAL SUPERINTENDENT

ELECTRICAL SUPERINTENDENT

OPERATING TOUR FOREMEN

Celgar Limited plans to fill these positions now in time to allow successful applicants to assist in checking equipment installations in the new 500-ton bleached kraft pulp mill under construction at Castlegar.

Here is an unusual opportunity to participate in building and operating a modern pulp mill. Celgar is a well-established Company offering attractive salary schedules and welfare plans in one of Canada's finest residential locations.

Experienced pulp mill personnel interested in advancement are invited to submit a confidential detailed letter of application as a basis for personal interview.

Write now to:

CELGAR LIMITED

1030 W. Georgia Street, Vancouver 5, B. C.

Attn: L. S. McGill

Applications will also be accepted for experienced operating personnel such as PULPING GROUP LEADERS, BLEACHERY OPERATORS, COOKS, RECAUSTICIZING OPERATORS and SIMILAR KEY OPERATING POSITIONS but interviews for these positions will not be conducted before June 1st.

PULP AND PAPER—MANAGEMENT

A good management opportunity is available with a leading manufacturer for a MILL MANAGER for a medium sized new mill producing newsprint and specialty papers.

Candidates must be capable Engineers with adequate production and senior management experience. The emphasis is on proven management ability and the position will have good growth possibilities within a very good group.

AGE: 38 - 45

REMUNERATION: Will be substantial and fully commensurate.

Applications should be in writing and give full particulars of education, experience, age and salary. They will be acknowledged and held in confidence and suitable applicants will be interviewed.

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PAPER

NEW LITERATURE

Microstraining Installations

Offers a four-page bulletin which graphically illustrates three installations. This system of automatic filtration is widely used for the clarification of raw water supplies. Bulletin 7. Glenfield & Kennedy, Inc., 275 Halstead Ave., Harrison, N. Y.

Circuline Sludge Collectors

Presents complete line of six series and 15 types. Also announces two new series and six types of collectors. Series U features multiple effluent weirs for uniform flow and a tank with sloping bottom for construction economies. Series A consists of aeration sludge collectors for preliminary and extended preaeration and settling. Link-Belt Co., Prudential Plaza, Chicago 1, Ill.

Conoflow Saunders Valves

Gives construction details, operating characteristics and specifications of the Series HB valves. Also includes a section on valve sizing and flow coefficients which aid in the proper selection of Saunders valves. Bulletin HB-7. Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.

Bauer's Pressure Feeder

Photo diagrams show how the No. 564 pressure feeder is used to load bulky material of low density or extremely wet materials into continuous screw presses under pressure. This force feeding greatly increases press capacity and versatility. Bulletin P-33 also includes data on typical applications, operation of the unit and its advantages. Bauer Bros. Co., Springfield, Ohio.

Controlled Volume Pumps

Explains how controlled volume pumps solved the problem of metering a softening agent into the distribution lines at two pumping stations serving Ft. Bliss, Tex. Data Sheet D-59-1. Milton Roy Co., 1300 E. Mermaid Lane, Philadelphia 18, Pa.

A-C Construction Machinery

Reviews recently introduced 340 h.p., 30 yard heaped, TS-360 motor scraper. Catalog MS-1357. UT-116 gives an illustrated story of the D-10 and D-12 utility tractors. Catalog MS-1322 covers highlights of engineering, design and construction features of the TS-160 motor scraper. Catalog MS-1319 is a revision of a previous catalog covering the Model D motor grader. Allis-Chalmers Mfg. Co., Construction Machinery Div., Milwaukee, Wis.

Embeco Pre-Mixed Mortar

Outlines how hard, strong, tough, nonshrink repairs can be made to cracks, holes and ruts in concrete floors. Bulletin EPMM-4. Master Builders Co., Cleveland 3, Ohio.

G-E Form G Motors

Discusses benefits and features of complete line of fractional horsepower Form G general purpose motors. Also shows 16 different kinds of f.h.p. motors. GEA-6424A. General Electric Co., Schenectady, 5, N. Y.

Jerguson Angle Valve

Describes and illustrates the unique No. 74 universal angle valve for liquid level gauges or instrument piping and general use. Data Unit 361. Jerguson Gage & Valve Co., 80 Adams St., Burlington, Mass.

Material-Level Indicators

Tells how these indicators accurately and automatically control level of pulverized, fine, crushed or granular material in bin or silo. Also discusses the general purpose model SG-4 and a specially designed model SG-4X for hazardous dust conditions. Bulletin I-5-C. Fuller Co., Catasauqua, Pa.

Link-Belt Jetslingers

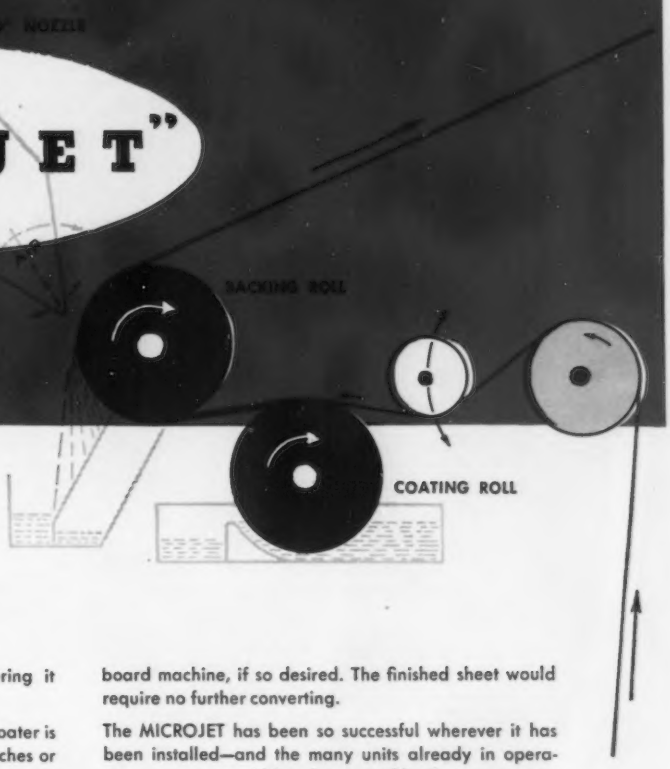
Tells how these machines are equipped with short, high-speed belt conveyors for hurling free-flowing bulk materials into areas inaccessible by other mechanical means. Illustrates both the suspended, swiveling and wheel-mounted units and gives dimensional data. Folder 2721. Link-Belt Co., Prudential Plaza, Chicago 1, Ill.

Pulsafeeder Metering Pumps

Includes the following information: how the Pulsafeeder can be used; types of hard-to-pump fluids which the metering pumps can handle; a detailed description (with drawings) on how the Pulsafeeder works; and various type reagent heads available for effective metering of difficult fluids. Catalog 59. Process Equipment Div., Lapp Insulator Co., 112 Hall St., LeRoy, N. Y.

"MICROJET"

the COATER where the metering is done by high velocity air



...and a clean, smooth, uniform job of metering it does, too! The accuracy is exceptionally high!

The quality of coat coming from the MICROJET Coater is exceptionally fine, being completely free of scratches or other surface imperfections. The economy is high in that maximum coverage per pound of coating is obtained. The WALDRON MICROJET Coater can be installed actually on or immediately in series with the paper or board machine, if so desired. The finished sheet would require no further converting.

The MICROJET has been so successful wherever it has been installed—and the many units already in operation range up to 226 inches in width—that we suggest you discuss its advantages with one of our engineers in connection with that coater project you have in mind. It has much to offer.

"ON-MACHINE" USERS OF THE MICROJET

	No. of Units
International Paper Co.	4
Container Corp.	1
Regal Paper Co.	1
Olin Mathieson	1
E. Texas Pulp & Paper Co.	2
Sutherland Paper Co.	2
Waldorf Paper Co.	2
Gulf States Paper Co.	1
Potlatch Forests	2
Alton Box Board	1
United Board & Carton	1
Union Bag-Camp Paper Corp.	1

MICROJET COATER

WALDRON
PROCESS MACHINERY

LEADER IN WEB PROCESS ENGINEERING SINCE 1827

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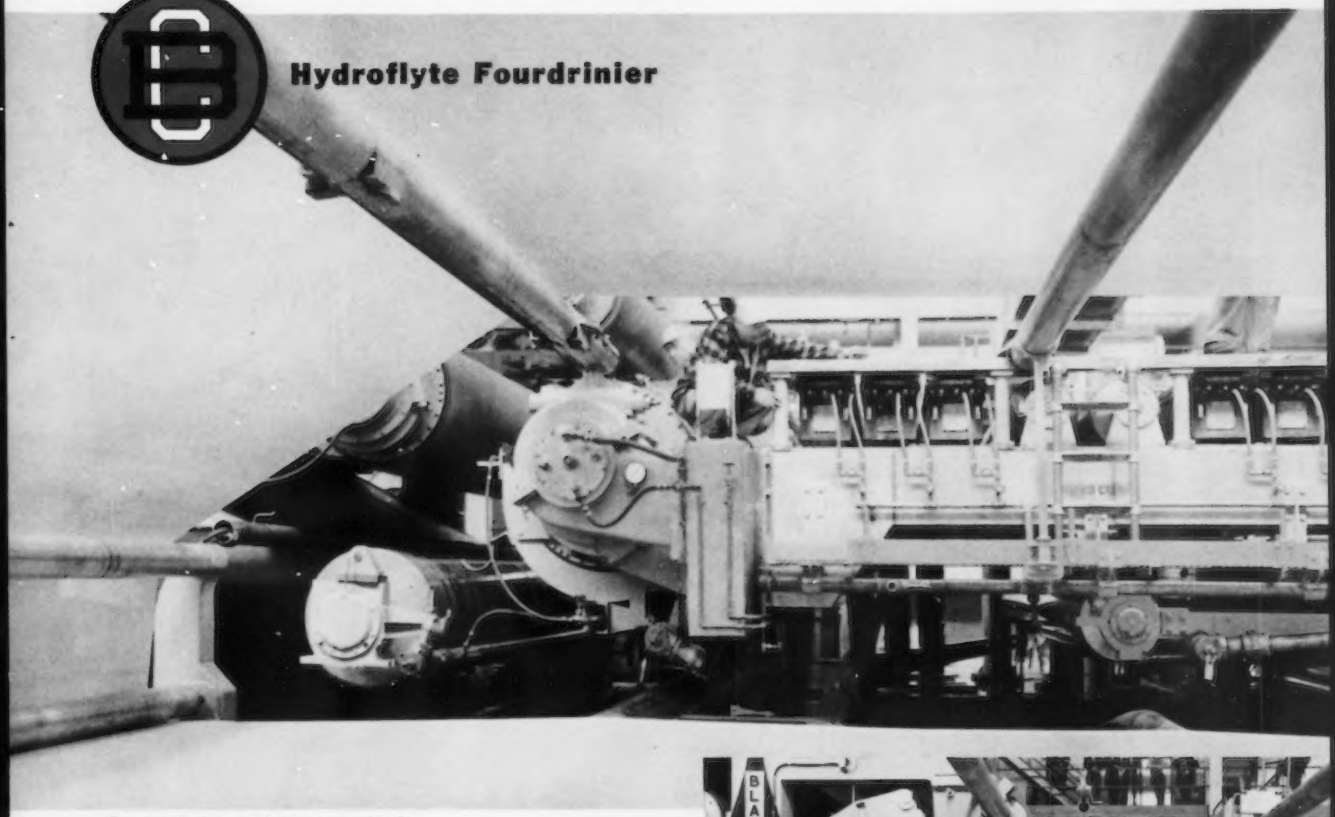
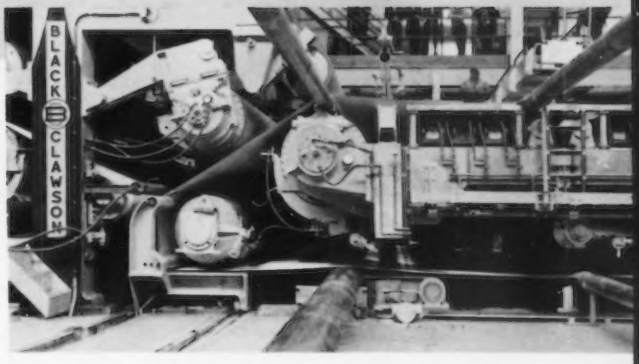
when it's easier to move a few hundred pounds of wire?

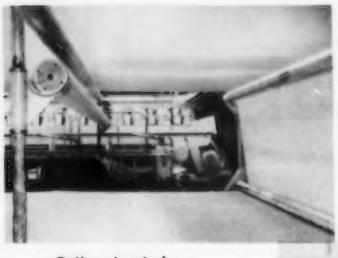
Hydroflyte Fourdrinier



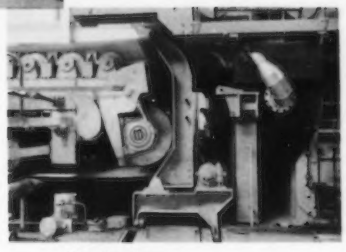
Tensioned wire pre-strung on special rig in aisle alongside Hydroflyte Fourdrinier



Wire is quickly pulled on cantilevered Fourdrinier by winch and cable.



Rolls retracted



Wire in place

Doesn't it make sense to change the wire as quickly and safely as possible? With the Black-Clawson Hydroflyte Permanent Cantilever Fourdrinier you eliminate costly downtime. Suction, air, water, power, saveall, shake and drive connections **are not disturbed in any way.** Positive alignment and precision adjustments are maintained always. Another reason why papermakers who demand the best come to

The Black-Clawson Company
Paper Machine Division, Watertown, N. Y.

Another Advanced Engineering Design

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A SKILLED HAND IN CHEMISTRY...AT WORK FOR YOU

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NOPCO POINTS THE WAY

Nopco points the way to quality products in pulp and paper operations. Nopco offers a full line of paper chemicals, each specifically designed to yield better products . . . every time . . . with dependability you can count on.

Perhaps the skilled hand of Nopco can go to work for you. Back of every chemical made by Nopco for the paper industry stands Nopco Technical Service—an experienced staff ready to assist with laboratory data and recommendations based upon your specific requirements.

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WAX SIZES	CALENDER STACK LUBRICANTS
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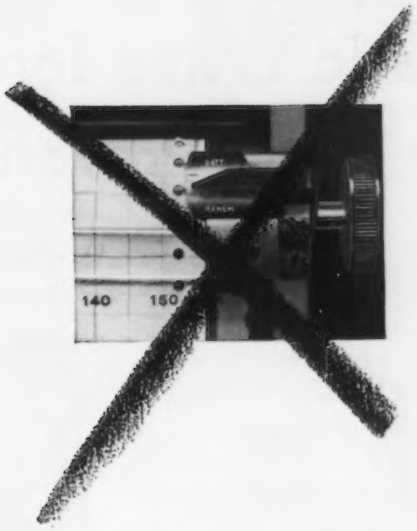


NOW! no batteries or standard cells in *ElectroniK* potentiometers

The new Honeywell Continuous Voltage Stabilizer makes batteries, standard cells, and standardizing mechanisms unnecessary in new Brown *ElectroniK* circular or strip chart potentiometers. This new unit accurately regulates the D-C reference voltage supply to the measuring circuit. Standardization is no longer necessary.

The small compact stabilizer unit uses Zener diodes and an ambient temperature compensator to deliver a constant rectified voltage from line supply. This enables the instrument to respond to changes in the measured variable without interruption.

Each Continuous Voltage Stabilizer means more dependability, less maintenance, continuous attention to the measured variable, and still another reason why *ElectroniK* instruments are your best value in measurement and control. Get complete details from your nearby Honeywell field engineer . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

Honeywell

First in Control

SINCE 1885

75th YEAR PIONEERING THE FUTURE

Special Paper Trade Journal Staff Report

Plastic Wires for Fourdrinier Machines Now Proven in Regular Operation

Development of a new synthetic fabric for use in place of bronze wires is described. Also presented are two reports on extensive mill operations with this material.

John C. W. Evans,
Editor

A new type of synthetic fabric material to replace conventional bronze fourdrinier wires has been announced by the Formex Co., Division of Huyck Corp. According to Charles A. Lee, general manager of Formex Co. "The new forming fabric successfully culminates seven years of intensive research and development work by Huyck personnel."

The Formex Co. was established as a division of Huyck in June 1959. Executive offices of Formex are located in Knoxville, Tenn. The material is manufactured at the company's factory in Greenville, Tenn., under the supervision of J. G. Armstead, resident manager. The factory is at present undergoing expansion Formex Co. of Canada with G. J. Chalmers as general manager will manufacture and market the new product in Canada. The first Canadian use of this fourdrinier wire substitute went into successful operation late in March.

Now Commercially Available

Although many experimental trials of the new product, known as "Formex," were made on commercial machines in 1957, 1958 and 1959, the company has only recently begun to accept commercial orders for it. However two mills have been running Formex on the fourdriniers in place of bronze wires for many months. Separate reports follow based on Paper Trade Journal staff interviews with the personnel of these mills. This new material has been successfully run on paper machines producing newsprint, corrugating medium, writing grades, tissues and kraft papers.

"The rate of introduction of Formex will be slow," Mr. Lee told Paper Trade Journal editors. "The new synthetic forming material is highly engineered, requiring great precision in manufacture" he said. "It is also receiving painstaking attention from the Formex Co.'s application engineers in the field. At least through 1960 the fabric will consequently not be offered for sale generally but will be sold rather on a limited basis to permit sound engineering approach and optimal performance for each machine clothed" concluded Mr. Lee.

Charles A. Lee, general manager of Formex Co. was previously a consultant to the paper industry and prior to that was associated with Kimberly-Clark Corp. working on paper machine research and development.

Many advantages

The new material is said to offer many advantages over conventional wires and the two mill reports included here confirm this. Among the advantages are

1. It is woven endless so that there is no seam to fill up or hang up on the suction boxes.
2. It is extremely light in weight and completely flexible in all directions. It is not subject to damage as a result of creasing or wrinkling during shipping or installation.
3. Because of its plastic material basis it is extremely resistant to corrosion conditions in both low and high pH conditions.
4. Because of its elasticity and flexibility it resists down jams, ridging, pimpling and punctures.
5. There is no tendency to edge cracking as with metal wires due to fatigue and corrosion.
6. Although the possibility of damage is slight, if it should occur the material may be sewn or patched.
7. A wider variety of weaves and weights is possible than with conventional wires.
8. Less tendency to wire mark the sheet due to (7) above.
9. Drainage characteristics (surface tension effects, etc.) are such that improved drainage on the fourdrinier may be obtained.
10. It is said to guide very well.

Although the "stretch" of the Formex fabric is slightly greater than bronze wires, it is said to not constitute a problem. The fabric is manufactured so as to control stretch to low units. Among the measures taken to control stability is the formation of permanent bonds at each intersection or creasing of the warp and the weft threads. Minor modifications and additions to the fourdrinier are required to permit running of this fabric. This new material is really a fabric screen but we seriously doubt if papermakers or most others associated with the industry will ever refer to it but as a "plastic wire."

Formex is manufactured under Huyck's U. S. Patent No. 2,903,021.

Use of Formex Wires at CZ's Lebanon, Ore., Mill

Report of an interview with W. O. Beaton, mill manager by Paul D. Van Derveer, associate editor.

Q. *Mr. Beaton, we understand that your mill has had considerable experience with the new forming fabric for fourdriniers. How long have they been in operation at your mill?*

A. We have had about six months experience on forming fabrics.

Q. *How do they compare with conventional wires for life?*

A. Discounting our experimental work we feel confidant of obtaining in the neighborhood of a one hundred per cent increase in wire life.

Q. *What type of stock are you using?*

A. We are primarily involved in the production of corrugating medium using a high yield sulphite cook made in a conventional sulphite digester.

Q. *What is the width of the wire?*

A. Eighty two-inch maximum trim.

Q. *Is any additional equipment needed along with the new forming fabric?*

A. Additional equipment was supplied by Huyck Equipment Co. This consisted of Mount Hope rolls and a stretch assembly. They are conventional.

Q. *Is there any problem of stretch with these new forming fabrics?*

A. These have less stretch than a conventional wire. During the life of a forming fabric it stretches about 2½ per cent. Two per cent occurs in the first three or four hours of operation. There is very little additional stretch during the remainder of the life of the wire.

Q. *Do you have any problems of slippage?*

A. You have to stretch the new fabric on pretty tight, but once it gets going there is far less tendency to slip than with a conventional wire. Regular wires show a polish on the couch roll but with these forming fabrics it remains pretty dull as there is no slippage with it.

W. O. Beaton

Q. *Have you had trouble with holes or edge cracks?*

A. At no time during the time that we have run these have we ever experienced an edge crack or a hole punctured through the fabric. Actually foreign material damaging the material is no problem at Lebanon, even though we use no screens in our system.

Q. *Do you repair any damage to this new fabric in a convention manner?*

A. Up to now we have never been required to repair it. During our use we have had no experience whatsoever in repairing, but if you had to repair a hole you would use thread and Formex Co. supplies a synthetic thread for this purpose. When the fabric begins to show holes, we find that it is worn out uniformly all over.

Q. *Do you have any problems in taking off a new forming fabric, or in putting one on?*

A. Taking it off is no problem, of course. It does take us a little longer to put on because it is necessary to install additional rolls, but we have been able to cut this time down. A possible advantage is that you don't have to be careful of handling the material as you do with a regular wire. Wrinkles pull right out.

Q. *What grades of paper do you make? In what range of basis weight?*

A. We manufacture corrugating medium, butcher grades and wet vegetable wrap. The vegetable and butcher's grades are made from conventional unbleached sulphite. Basis weights on these grades range from 30 pounds to 125 pounds.

Q. *How many machines do you have in operation using the new fabric?*

A. We only have one in operation at this time.

Q. *How about wire marking?*

A. We have no problem in wire marking with the grades we manfacture.

Q. *How does the new fabric compare with conventional metal wires in effect on life of suction box covers?*

A. I think the new forming fabric is a little harder on suction box covers because for one thing it tends to conform more to the holes than the regular wire will. It is not self supporting across the holes and tends to wear the cover but there is no grooving of box covers.

Q. *How does the weight of the forming fabric compare with the conventional wires?*

A. Our conventional wire weighs 390 pounds and a forming fabric for the same machine weighs 54 pounds. It can if necessary be shipped air express.

Q. *Is there any difficulty in guiding the new forming fabric?*

A. We have an old mechanical guide and the fabric guides very well. It is quick to respond and any changing of guide reel gives it immediate correction.

Q. *What is the speed range on the machine using Formex?*

A. Depending on grades the speed varies from 450 f.p.m. to 735 f.p.m.

Q. *Do you have any measurements of load on the couch motor with this fabric as compared with conventional wires?*

A. No! We have a line shaft drive so it was not possbile to determine if there was any change in power to drive the couch.

St. Regis East Pepperell Mill Has Run Formex Wires for Two Years

On-the-spot report of operation and changing of this new fabric, including interviews with operating personnel.

Harry Dyer,
Assistant Editor.

St. Regis Paper Co.'s Nashua River Division in East Pepperell, Mass., has been making trial runs with plastic wires since 1957 on two of its paper machines. We visited this mill on March 25 to learn of their success first hand with the new type of fourdrinier clothing.

At the mill, we talked with managers and operating personnel. Chief among these were Russell Hamilton, resident manager; Frank Gondek, superintendent of manufacturing; Clyde Lansil, assistant superintendent of manufacturing, and Bernard Hamilton, day superintendent. Leonard Scofield and Albion Blake, boss machine tenders of the two machines using the plastic wire, also kindly gave us their comments.

Since April 27, 1958, No. 1 paper machine has seen the successive use of ten plastic wires; the last being mounted on December 14, 1958. At the time of our visit, a new wire was being installed. Two other plastic wires had been used prior to 1959, interspersed with conventional metal wires. The width and length of the endless wires now being mounted is 97½ inches x 42 feet 6 inches. Its mesh is 49 x 33.

No. 2 machine has continuously run six of the new wires between April 12 and December 3 of last year. It is at present running a plastic wire 91½ inches wide, 55 feet 9½ inches long, 26 x 40 mesh. Previously, two others had also been run in 1958 on this machine, also in between metal wires.

Russell Hamilton,
Resident Manager

Both paper machines are very similar and are more than 50 years old. Each employs an open type headbox where the stock is delivered onto the wire through a scissors slice. Each fourdrinier section has five stationary suction boxes and a 14-inch diameter suction couch roll. The arrangement of wire return rolls bears importance with respect to plastic wires and is discussed in greater detail later. Highest speeds of both machines on plastic wires has been 325 f.p.m.

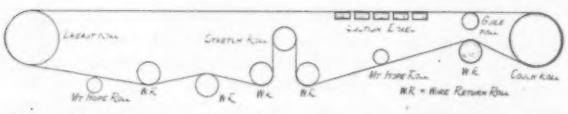
The East Pepperell mill manufactures a wide line of bleached and unbleached kraft specialty papers, such as box liners, asphalting papers, gummed papers, etc. No. 1 runs most all of these grades in varying basis weights from a 30 to 180 pound sheet. No. 2 is used primarily to manufacture St. Regis' "duoSTRess" stretchable paper. Basis weight of the sheet on this machine generally runs between 30-50 pounds but occasionally runs as high as 110 pounds.

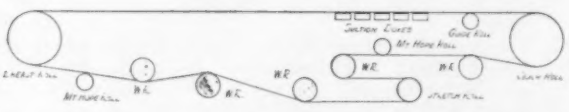
Because the plastic wire has a tendency to stretch in the machine direction and shrink in the cross-machine direction, minor alterations in the wet end are required: namely, the installation of expansion rolls and a hitch roll.

Principal Factors in Operation

Following is a list of factors pertaining to fourdrinier operation and how plastic wires influence machine performance at this St. Regis mill.

- Drainage is reported to be better than ordinary whereby stock can be run 2-3 points lower in consistency. At the same consistency, the machine speed can be increased, provided the drying capacity is available.
- Wire guiding did present a problem to St. Regis. It was found that the response of the old mechanical guiding equipment was too slow and that the wire, due to its lightness, was somewhat ineffective against the guide's palm but a new guide was developed which solved this problem.
- During shutdowns the plastic wire has to be continuously showered with cold water. This is to prevent wrinkling which although not permanent, requires some time to eliminate once





The above sketches show how the stretch roll and Mt. Hope expansion rolls are mounted on paper machines 1 (left) and 2 (rt.) at the St. Regis mill. On No. 1, wrap around area on the couch roll was increased by raising the nearest wire return roll, and a vertical stretch was installed to reduce wire slippage while the author was present.

Frank Gondek, Bernard Hamilton, and Clyde Lansil

the machine is again in operation. Edge cracking occurs to a slight degree but certainly not as much, nor as severely as with metal wires.

• Repairing of holes and tears is accomplished with a needle and plastic thread, or by a specially compounded "glue" supplied by Formex Corp. The "glue" when used forms a patch.

• Plastic wire life, although of generally greater than ordinary, showed considerable variation. One wire on No. 2 machine ran continuously for 84 days. The wire at present on No. 2 has been on for 42 days and shows signs of very little wear.

Generally shorter wire life has been experienced on No. 1 machine. This is reasoned to be due to running a wider range of grades and weights at wider range of stock temperatures.

• The pH of stock (at least between 4-8) does not affect the plastic wire, nor is it subject to ionic reaction. Mechanical erosion of the knuckles is considered about the same. One mill (not East Pepperell) is reported to have literally turned a used plastic wire inside out and to have remounted it on the machine, thus increasing the wire's usefull life. But, this has not been confirmed.

• There was some slippage of the wire while the machine was running. Therefore, higher vacuum cannot be carried on the suction boxes and couch. St. Regis expected to counteract some of this slippage by installing a wire return roll so that the couch roll would exert a greater purchase on the wire. When asked if it was possible that the size of breast and couch rolls could be reduced because of the plastic wire's greater flexibility and lighter weight, it was unanimously agreed that they could not be reduced. Slippage was cited as the reason.

• The St. Regis mill experienced no plugging up of the wire. Thus the mill finds that periodic wire cleaning is not necessary. This mill does not manufacture any filled paper, so how fillers may affect the wire is not known. Grease and slime spots are not deposited in the wire.

• Its greater flexibility and lighter weight leads to easier mounting of plastic wires on the machine. The plastic wire for St. Regis' machine weighs some 45 pounds, compared to nearly 300 pounds for similar conventional wires. Handling is not as critical since the plastic cloth does not tear or rip as readily. The overall time to change wires is not noticeably affected.

• Hanging of the wire and wear of the suction box covers is not evident through the use of plastic wires.

Summing up

In summing up their comments, each of the gentlemen interviewed expressed complete optimism in plastic wires. Mr. Blake expressed his great approval of them and cited particularily the factors—little edge cracking and elimination of jams and ridges, as most advantageous from his point of view. Mr. Scofield echoed Mr. Blake and added no wire marking and spotting to the list. He thought the plastic wire "made just as good a sheet of paper" (Mr. Gondek added "better") but qualified his approval as the result of his machine running more grades of paper under more rigorous conditions. R. Hamilton concluded the interview by stating that "once all of the problems are overcome, the plastic fourdrinier wire will probably be widely accepted by papermakers."

With Mr. Lansil are boss machine tenders Leonard Scofield and Albion Blake.

BACKGROUND ON THIS PROJECT

The editors have been aware of this development in plastic wires for many months. Last fall a member of our staff visited the St. Regis mill in East Pepperell and observed plastic wires in operation. At the request of Huyck we refrained from reporting on this development until more detailed information was available.

On Wednesday afternoon, March 23, the editors interviewed Formex executives and obtained the release of information on this new product. Thursday Harry Dyer, assistant editor, flew to East Pepperell, Mass., to observe plastic wire operation on Friday and a wire change on Saturday, as well as obtain an on-the-spot report from the personnel of one of the two mills where plastic wires have been in use for over a year. Paul Van Derveer, associate editor, arranged on Thursday for a long distance interview on Friday with the mill manager at Crown Zellerbach's mill in Lebanon, Ore., the other mill with extensive experience with these plastic wires. During this time editor John Evans acted as over-all coordinator of the project, having successfully telegraphed the patent office for a copy of the patent, familiarized himself with the details of the manufacture and use of the fabric.

Early Monday our editorial staff began compiling all the facts from these sources and preparing the story in its final form, just meeting our five o'clock deadline for feature articles for this issue. Here you have, hot off the press, our story on the industry's latest extremely significant development.

This is, we think, an example of Paper Trade Journal's prompt and comprehensive reporting on news of significance to paper and pulp people.

Something Can Be Done About Finishing

Paper Trade Journal's Phase Two of "Operation Finishing" opens with this, the first of nine articles by one expert who for personal reasons wishes to be anonymous.

There is a great deal which can be done about the Finishing Department even though in your mill, it may be treated just as an expensive "cross to bear."

INDUSTRIAL ENGINEERING IS LOGICAL TO CONDUCT INVESTIGATION

The research department will not be as useful as it has been in connection with other functions of manufacture. The cost department alone can produce figures which prove that the cross is a very heavy one in fine paper mills. The design engineering department is probably engrossed in pulp and papermaking problems. Hence, if there is no industrial engineer in your plant, it may be necessary to search for an experienced consultant to find out what can be done.

SERIES OF WEEKLY ARTICLES TO EXPLORE VARIOUS AVENUES

In order to help our readers with their finishing problems, it is proposed to spell out in a series of articles, the most important avenues to explore to do something about the improvement of the finishing department. Readers, who are concerned about the high cost of finishing paper, know that very important profit savings are available in this area. There are fine paper mills which can reduce finishing costs by as much as $15 per ton of sheets finished.

LABOR COSTS HIGHEST IN FINISHING

These articles may also interest the mill manager, who does not realize that the proportion of labor required to finish, warehouse, and load paper, compared to that for making, is so high. A typical fine paper mill may require 225 men in the finishing, warehousing, and shipping operations compared to only 49 in the making department.

GREATER FLOOR SPACE REQUIREMENTS FOR FINISHING

In addition, the floor space requirements for finishing are larger than for paper manufacture in a fine paper mill. In fact, the lack of storage space for "in process" paper in older finishing rooms illustrates the lack of appreciation on the part of mill design engineers, of the importance of studying surge area requirements in the finishing department. This causes inefficient short runs on the paper machines with consequent high lost machine hours and unsaleable paper production for grade changes each day.

ARTICLES BY EXPERIENCED OPERATOR WITH MANAGEMENT SLANT

Let us proceed to discuss the avenues which can be explored to do something about finishing. It is planned to cover these from the standpoint of a fine paper mill where most of the paper is finished in sheets, of which the majority is packed in cartons. This type of mill has all of the finishing problems of other mills except newsprint and coarse paper mills where straight line roll finishing have large mass production problems. It might also be significant to state that the writer is familiar with the subject because of his early experience in operating a large finishing department and later on the management level responsible for industrial engineering.

SUBJECTS TO BE DISCUSSED IN COMING WEEKS

The scope of succeeding articles will include the exploration of the following avenues:

1. Scheduling policy and its effect upon customer service, finishing department costs and efficient design of the finishing department.

2. Design or layout requirements of the finishing department with respect to its lines of flow, surge area requirements and shipping facilities.

3. Exploration of finishing costs in detail such as rewinding, sheeting, inspection, trimming, ream sealing, packing, warehousing and shipping.

4. Exploration of quality control in the finishing department to include the effect of good quality control on the paper machine.

5. Finished paper warehousing policies including such details as quantities required of each item to give customer service and the relative geographical position in the warehouse of fast and slow moving items.

6. Ideas with respect to new finishing equipment which should reduce the complicated multiple operations. These ideas are directed towards automation, but include development of such equipment as will produce a trimmed sheet from a parent roll.

7. Should the finishing department be separated from the making department or should it be actually a paper salvage section of the paper manufacturing department.

8. Can sales policy be designed to reduce finishing, costs without affecting customer service?

9. The contribution which digital computers or mechanized order processing can make towards policy making controls.

Something Can Be Done About the Finishing Department—I

Improved Scheduling Methods Can Increase Operating Efficiency in Finishing

Scheduling policy or lack of same, affects finishing department operating efficiency. If policy is directed by sales department it may reduce finishing efficiency.

The scheduling policy of an individual company has a very definite effect upon what can be done about the finishing department. Lack of a definite policy has the greatest adverse effect of all because under these circumstances, it may vacillate between extremes depending upon the influence of the individuals in charge of the sales, papermaking and finishing departments.

For instance, the sales department may demand that all production be scheduled at their direction with little regard for efficiency or excess costs required to meet peak instantaneous demands.

A very common policy is one which favors the papermaking department where scheduling is demanded for the most efficient operation of the paper machines. This does not hurt the efficiency of the finishing department if there is sufficient storage space ahead of the finishing department and/or if the production can be shipped as soon as it is finished. However, when this policy is carried too far and includes the production of items for which sales are very infrequent, there is generally insufficient storage space to accommodate the quantity required to give good customer service on active items. This, of course, hurts the sales department. Also, the lack of parent roll storage may result in frequent overloading of one finishing operation. For instance, if the production of grades scheduled for the next week contained 2,000 tons of sheets and 100 tons of rolls and the capacity for sheet operations is 1,000 tons per week and the roll wrapping capacity, 1,100 tons per week, it will be evident that 1,000 tons of sheets will have to be stored by the end of the week. The storage space provided for rolls ahead of sheet cutters is very frequently less than 3 days capacity or in the case above, 143 x 3 = 429 tons. So the result is that the finishing department is crowded out of other areas, which interferes with its efficiency.

Trend Towards Improved Customer Service

Fine paper mills, big and small, are lately being maneuvered by competition towards a scheduling policy of maximum customer service. To many of them, this means that the majority of carloads of paper will contain more grades than there are made on paper machines in three weeks. Hence, it will ultimately mean either extremely large inventories of finished stock or that the scheduling policy will be based upon the contents of the carloads scheduled. For instance, the customers' demands for shipment during one week can extend throughout the whole range of grades and basis weights and through three or more of the colors of each grade. It is not infrequent that 35 different grades of 5 different basis weights of more than three colors are required in one week's shipments. If storage limitations restrict the number of items which can be shipped from stock, it will be obvious that a large number of the balance of the items will have to be either made on the paper machine or withdrawn from parent roll storage. In the past, the customer who ordered a mixed carload of paper had to wait until all of the items not in stock were made and frequently the paper machine schedule required three weeks from the time the first one was made until the last one was made.

Effects of Emphasis On Customer Service

In this article, an attempt is made to demonstrate the effect that scheduling policy has upon the finishing department. This description may guide those who have to make the major decisions towards a variation in their present scheduling policy which will improve the finishing department. Of course, this will be useful only if it does not adversely affect the sales and papermaking departments.

I have chosen as a basis for discussion, the scheduling of a fine paper mill manufacturing 300 tons per day of 15 grades of various basis weights in 10 colors and 5 finishes in sheets and in rolls. The sheet versus roll tonnage ratio is 70:30. The sheet finishing capacity is 300 tons per day, the parent roll storage is normal, i.e., 400 tons and the finished stock warehouse capacity is 5,000 tons where 4,000 different items are stocked in quantities from 500 pounds up to 20 tons each. The "Car Make Up Area" capacity is equivalent to about one week's sales or 2,000 tons capacity. This shipping area is exceptionally large and will be found only in mills where the new

"A scheduling policy favoring papermaking efficiency can reduce finishing department operating efficiency, if there is not sufficient storage area between paper machines and finishing."

SF NEWSLETTER

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"Output of each finishing operation and piece of equipment as well as other data such as, surge area capacities, should be obtained."

concept of customer service importance has been acted upon.

Precepts which Should Guide Scheduling

The finishing department scheduling policy must, I think, be guided by the following precepts:

1. To provide for continuous use of *a* sheeters of each size, *b* sorting equipment and personnel, *c* trimmer and ream sealing and packing crews, *d* slitter equipment, *e* secondary finishing equipment, *f* super calender equipment, *g* tertiary finishing equipment.

2. To also balance the load between high production lines efficient only for runs of five tons or more, and off line operations designed for small orders.

3. To provide a standard finishing schedule of the same number of weeks as that for the paper machines so that a large proportion of the major finishing equipment can follow a pattern which can be perfected to the highest degree of efficiency.

The problems of scheduling on this basis are not insurmountable. First, the average shift capacity of each piece of equipment must be ascertained. Secondly, the surge area capacity for each group must be obtained. Thirdly, an average weekly sales forecast of item of each grade must be obtained. Lastly, the finishing operations required for each item must be listed.

Two Steps to Scheduling

The first step is to obtain a standard paper machine schedule for regular grades. From this, make up a standard finishing schedule for each operation required by these grades.

The second step is to prepare a base operating schedule which contains the standard schedule to which is added the specials contained in the paper machine operating schedule. Again, it is pointed out that this must be designed to provide for continuous operation for at least one week of all operations required instead of two days on and three days off, etc. Of course, the short order operations do not fit in this but it is probably not within the power of the scheduling clerk to control the quantities of short orders. These are mainly within the control of the sales department and if adequate off line capacity is assigned to them, there should be no interference with routine orders.

Benefits of Good Scheduling

The results of careful, balanced scheduling are very important. Some of them are listed below:

1. Increase in number of rolls per set on cutters.

2. Reduction in the lost time operating hours for crews and equipment waiting for paper to come through from the previous operation. This results from the balanced scheduling of runs above five tons on the production lines. Then the mix of slow and fast items only affects the instantaneous quantities in the surge areas between operations.

3. Reduction in set up lost time.

4. Simplifies sealing, labelling, and packing supply operations.

5. Provides continuous effective work which is so essential to reduction in wage cost especially when incentive payment plans are used.

6. The base standard pattern contributes to the improvement in efficiency which can be obtained when repetitive items are processed regularly.

7. The continuous schedule solves the problem of keeping trained employees who are frequently lost when their operation is scheduled intermittently.

8. High use factor of equipment is obtained.

Efficient scheduling and thereby an efficient finishing department can only be obtained by a definite scheduling policy which integrates sales department essentials with both paper machine operation and finishing.

How to Improve Felt Performance When Using Wet Strength Resins

Use of wet strength resins is firmly established. They cause some felt plugging and hardening. Specific procedures are recommended to minimize these problems.

Ralph N. Prince,
Field Service Engineer,
Huyck Felt Co.

The use of wet strength resins in the paper industry has grown rapidly during recent years. A large number of resins and techniques for their application have become available. Generally the emphasis in the selection of a resin has been on ease of use, cost and ability to impart wet strength to paper. Their effect on felts, particularly concerning filling up, has been a secondary consideration.

This paper summarizes ways of improving wet felt performance when wet strength resins are used. It is not the purpose of this article to explain the chemistry of wet strength resins; yet, some reference to it must be made. Detailed chemical and technical data is available in the TAPPI wet strength bulletin and from the resin manufacturers. Because all wet strength resins can cause wet felts to fill up or harden earlier in life than normal, the problems of everyday use, together with some practical remedies will be discussed.

The most common wet strength resins used commercially are melamine formaldehyde (MF) and cationic urea formaldehyde (UF) types. Also, the relatively new alkaline-curing polyamide resins are becoming a major factor in the wet strength field. Other wet strength agents which are used to a lesser degree are certain gums, some latices and polyethylenamine. The MF resins and latices present the more difficult wet felt problems. The polyamide resins may prove equally troublesome, but information is limited at the present time.

Melamine-Formaldehyde Resins

Melamine-formaldehyde is a weak base which readily forms a positively charged ion. Under the conditions of use in the paper mill, the positively charged melamine-formaldehyde ion condenses to a relatively massive, positively charged, colloidal particle which is the active form causing wet strength development in paper. Because cellulose is negatively charged, the melamine-formaldehyde resin is attracted to it and almost complete absorption can take place in a matter of seconds.

Under normal papermaking conditions, the ideal situation rarely exists, therefore all too frequently complete adsorption on the cellulose is not accomplished and some active resin may remain which can be attracted to negatively charged wool in the wet felts. Although the wet felt may be exposed to relatively small amounts of wet strength resin, the fact that it is exposed continuously affords the opportunity for gradual filling up or hardening.

The MF resin colloid is somewhat sensitive to anions present in the water system. Although some anions cannot be excluded, divalent anions, most commonly sulphates, are particularly detrimental to wet strength development. Multi-valent anions of a higher order are even more troublesome. Too great a concentration of multi-valent anions can cause precipitated resin to be available as a filling material for wet felts.

Urea-Formaldehyde Resins

The first UF wet strength resins were an anionic type with sodium bisulphite as the usual modifier. The principal use of the anionic UF resins was in unbleached kraft papers where alum or other substances capable of providing multivalent actions must be present for effective resin retention.

More recently, other modifiers have been utilized which produce cationic UF wet strength resins. These resins are manufactured and marketed as viscous, aqueous syrups containing 30 to 50 per cent solids. Some cationic UF resin syrups are true solutions while others are concentrated colloidal dispersions. Both types may be diluted infinitely with water until gelatination occurs.

In contrast to the behavior of the MF resin colloid, the UF wet strength resins are not sensitive to multi-valent anions. Perhaps one of the greatest filling up hazards for UF resins occurs when partially gelatinized resin gets into the system. Such resin cannot be dispersed sufficiently to avoid globules that the sheet will transfer to the wet felts.

Retention of Resins

Under optimum operationg conditions, the MF resin is adsorbed most rapidly, the cationic UF resins are next and the anionic UF resins are the slowest to be absorbed. Maxwell, Reynolds and House reported in 1951 (Tappi 34, 5: 223-236) the following retentions for the above resins when 3 per cent was added to stock:

	Max.	Average
MF Resin	3.0%	2.1-2.5%
Cationic UF Resin	2.2%	1.6-2.0%
*Anionic UF Resin	1.6%	1.1-1.5%

*In unbleached kraft pulp only.

The greater retention of MF resin is very apparent in the above table;

however it is a curious fact that wet strength development in the paper may, in some instances, be as great with some cationic UF resins as with the MF resin at the same input levels. In addition, UF wet strength resins tend to cause less felt trouble than the more rapidly adsorbed and more greatly retained MF resins. Furthermore, although there may be more UF than MF resin in the white water of a papermaking system, retention data indicates that there will be a less tendency for the UF resin to be retained by the felt than with the MF resin.

Polyamide Resins

Polyamide wet strength resins have recently become commercially important. They are alkaline-curing resins but they are reported to be cationic to cellulose and to have epoxy functional groups. No technical data is available at this time as to their chemical nature. There is some evidence that this type of resin is more efficient than either MF or UF resins and requires lower resin input for equal wet strength development. Further, there appears to be a maximum useful addition that a given paper-making furnish will tolerate. Additions above that maximum remain in the white water system thereby becoming available for attachment to the wool fiber of the wet felts.

For greatest resin efficiency, it is recommended that polyamide resins be added as near the wire as possible. In practice it has been found that beater addition is about 15 per cent less efficient but, by so doing, less wet felt filling is experienced. The increased wet felt life more than compensates for the slightly greater resin cost. In all cases, one or two showers and adequate cleaning equipment must be used on the felts. Emphasis on this felt conditioning approach is extremely important for attainment of reasonable felt life.

Minimizing Felt Difficulties

When using any wet strength resin, two good rules to follow are:

1. Follow the resin manufacturer's instructions explicitly.

2. Determine the point at which resin should be added, because the most economical point of resin addition may not be the most efficient.

The proper use of these two rules will help minimize wet felt difficulties.

Generally it is accepted that an appreciable fraction of the cellulose is present in the furnish as "fines" that adsorb large amounts of resin. There is evidence that these resin-loaded "fines" plug wet felts rather than the resin itself. If the resin is added as far back in the system as practicable, more time is available for agglomeration of the "fines" and there is then less tendency for them to cause wet felt filling.

"There is evidence that these resin-loaded 'fines' plug wet felts rather than the resin itself."

Reducing Plugging

When either MF or cationic UF resins are used, the following specific procedures have proven most effective in reducing felt plugging:

1. For an alkaline furnish, free acid should be used for neutralization. Alum should be avoided at this stage for some resins tend to form insoluble complexes which will fill up wet felts.

2. Certain microbiological slimes will combine with wet strength resins to form glasslike substances which deposit on or in the felts. This, of course, requires that the papermaking system be kept slime free.

"Theoretically, at least, it is desirable to keep wet felts at some acidity level below pH 4.7."

3. Total acidity of the white water should be maintained at a relatively low level otherwise serious felt hardening may result. This probably is due to the accelerated curing tendency of both MF and UF resins at low pH and high acidity levels.

4. Where a pitch condition exists, wet strength resins will aggravate the situation. It is best to use some kind of pitch dispersant together with a non-ionic surface active agent to minimize pitch deposition.

5. After installing and before wetting up pickup felts, it is helpful to remove all grease spots with a petroleum solvent. If this is overlooked, grease spots will become filled up rapidly by wet strength resins.

6. It is observed generally that the MF resin slows the stock appreciably when introduced near the sheet forming area on a paper machine. Often by moving back the point of addition only a few feet, this slowing action, as well as the felt filling tendency, can be reduced. There are certain grades of paper which require the slowing action of MF resin to accomplish proper forming characteristics. Map paper is an example of this, and it is well known that wet felt filling up is experienced usually during an extended run of map paper.

7. Multi-valent anions, such as sulphates, in the water system are particularly harmful when MF resins are being used. They not only cause a serious reduction in resin efficiency but also may cause felt filling conditions to develop due to precipitated resin in the system.

8. Because it is possible that there is always a small amount of wet strength resin circulating in the white water system, the wet felts constantly may be exposed to it. Unless some step is taken to reduce the tendency, the available resin can be adsorbed by the wool. As wool can be charged positively, negatively or both, making the felt positively charged will cause it to tend to repel the cationic wet strength resins. Below a pH 4.7, wool is positively charged. Theoretically, at least, it is desirable to keep wet felts at some acidity level below pH 4.7. This can be done by using a mildly acidic shower water.

Felt Cleaning

Generally the best way to avoid trouble with wet felt plugging by wet strength resins is to *prevent* filling up. No completely satisfactory method of cleaning wet strengths filled wet felts and restoring them to their original condition has been found. However, continuous felt cleaning can be used to keep felts cleaner longer.

Some techniques deserve special mention:

1. UF resins cause relatively little trouble if their acidification is accomplished with undiluted mineral acids. Alum should not be used. If alum caused plugging does occur, the felt

"No completely satisfactory method of cleaning wet strength filled wet felts and then restoring them to their original condition has been found."

should be washed either continuously or periodically with dilute acid and a non-ionic detergent.

2. A felt wash consisting of 2.5 gallons of commercial muriatic acid plus one pint of a non-ionic detergent in 50 gallons of water has been reported to be beneficial and to have extended felt life.

3. MF resins frequently do plug felts. This problem is countered best by continuous cleaning with warm dilute solutions of non-ionic detergent. These resins, once allowed to attach themselves to the wet felt, are difficult to remove. Some resin will be removed with a 2 per cent soda ash solution but the only satisfactory cleaning must be done off the machine. To do this, thoroughly mix one gallon of commercial phosphoric acid and 10 pounds of urea with 50 gallons of water for each 25 pounds of felt to be washed and heat to 185° F. Place felt in washer and run for 15 minutes, follow with warm water rinses.

4. Not very much is known about removing alkaline-curing resins from felts at the present time. However the uncured resin probably is removed best with a mild inhibited mineral acid whereas the cured resin should be treated with a mild alkali to dissolve the resin itself. Further work will be done in this field as the use and knowledge of these resins increases.

Summary and Rules

Wet strength resins are entrenched firmly in the paper industry and their use is expected to increase. Although they do create some felt plugging and hardening problems, these may be minimized by observing some general rules:

1. Follow resin manufacturer's instructions explicitly.

2. Avoid the use of alum for acidification of alkaline furnishes.

3. Keep papermaking system slime-free.

4. Keep total acidity low for MF and UF resins.

5. For pitch problems, use a suitable dispersant with a non-ionic detergent.

6. Remove all grease spots on felts before wetting up.

7. Add resin as far back in the system as practicable.

8. Avoid excess multi-valent anions with MF resins.

9. For MF and cationic UF resins, a felt pH below 4.7 reduces possibility of filling up.

10. Use continuous felt cleaning whenever possible.

11. Adequate cleaning equipment and showers must be used with polyamide resins.

This information has been found applicable to a wide variety of paper manufacturing situations. Special cases may require a modified approach and Huyck Felt Co.'s customer service laboratory will be pleased to study such situations and recommend optimum washing formulations. In addition, Huyck sales and field service engineers are ready to aid in the application of these techniques to all papermaking operations.

Prevent Paper Spoilage With Loading Dock Enclosures

The problem of loading and unloading paper without spoilage was solved by Strathmore Paper Co., Westfield, Mass., with five retractable loading dock enclosures covered with waterproof neoprene-coated nylon material. These enclosures for trucks were suggested by United Canvas Co. of West Springfield, Mass. Because the enclosures are tailor-made, they fit snugly around the rear opening of the trucks. Spoilage of paper through weather is thereby practically eliminated, according to Strathmore's warehouse manager. An additional advantage is the reduction in heating costs, since the enclosures prevent the heat from escaping to the outside air. Instead, some of the heat is guided into the trucks, making it more comfortable to work inside the trucks during cold weather.

The enclosures are constructed strong enough to withstand heavy loads of snow and much rough handling. The supporting frame is made of one-inch heavy galvanized pipe. Sturdy scissor-like arms are provided to extend and retract the enclosures. The arms are secured firmly to the warehouse wall by means of metal bars embedded in the brickwork. A particularly heavy fabric was chosen—16 oz. Coverlight-N, supplied by the Vulcan Rubber Products Division of Reeves Brothers. After more than one year's service, the enclosures show no sign of wear or tear, says the warehouse manager. The fabric has withstood rot and mildew. It is water repellent and does not store up moisture.

MAINTENANCE SERIES
NUMBER 13

How to Keep Getting Maximum Quality High-Yield Pulp From Disk Refiners

The author discusses the maintenance of both double and single revolving disk refiners in high-yield pulping applications. He deals in detail with maintaining uniform feed and keeping the machine in top condition.

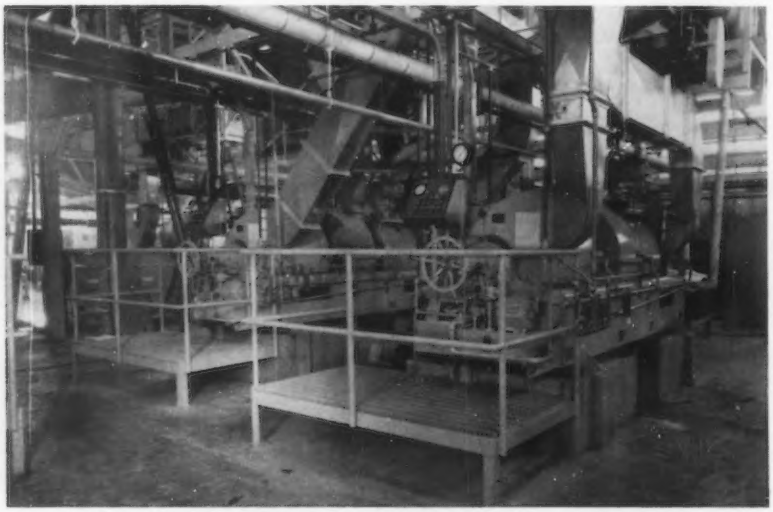
David Sharp,
Service Manager,
Bauer Bros. Co.,
Springfield, Ohio

Good maintenance is necessary to get the best results from your disk refiners whether they are double or single revolving disk type. Since it is more essential to separate fibers than to cut them in high yield applications, the double revolving disk refiner is used far more widely. However, maintenance of the single disk does not differ greatly from the double disk except for the feeding arrangement and that it has one less motor.

To get maximum stock quality from your machine, here are some factors that will affect it:

1. Proper selection of plates
2. Not over-extending plate use
3. Feed consistency
4. Chip uniformity in size and impregnation
5. Uniformity of feed
6. Condition of refiner

The first four items can be worked out in the mill with the help of a manufacturer's representative. Items 5 and 6 will be dealt with in detail.



Installation of 40-inch refiners in groundwood-from-chips mill illustrates good planning of location and foundations.

Importance of Foundation

Regardless of the age of the refiner installation, the foundation is one of the most important keys to low cost maintenance. One of the best foundations is one that supports the refiner on I-beams grouted in concrete and is both statically and dynamically stable. Vibration-detecting portable instruments are inexpensive and can easily pay for themselves by locating damaging extraneous vibrations.

The base of the refiner is a one-piece steel weldment. Because of the rigidity of the base and precise balance of the rotating parts, the machine is usually set on leveling wedges instead of being bolted to the foundation. However, since the parallelism of the heads is not accomplished by warping the base, some mills like to bolt down and/or grout in the base after it has been

leveled. Avoid setting the leveling wedges directly on concrete since shock loads tend to powder the concrete thus distorting the levelness.

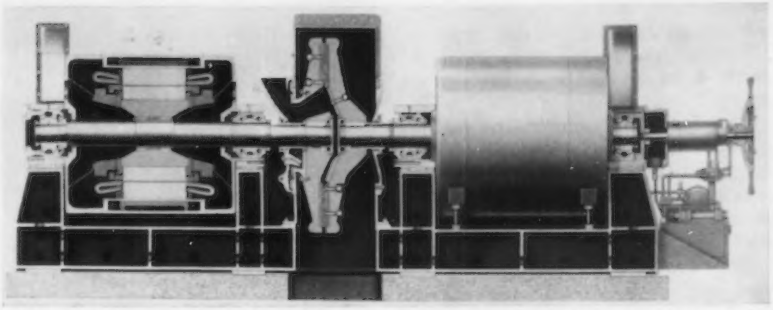
If your machine is a pre-1948 cast iron base refiner, check to see that your foundation does not warp during thermal changes, particularly during start-up. Disk parallelism check should be made while temperature is at normal operating conditions.

If you have occasion to move or install machinery close to a disk refiner, be sure to allow a minimum of four feet on each side and ends of the refiner. Keep a six-foot overhead space clear and if possible, provide a rail above for tackle and slings for disassembly.

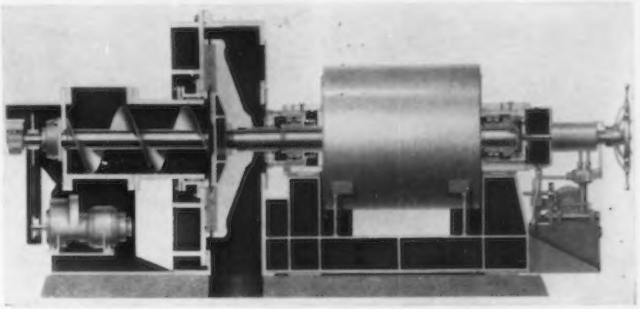
When discharging to a chest, it is necessary to provide approximately 120 square inches of venting per refiner. The disks on free discharge refiner provide action of a fan; if the chest is not vented, the feed of stock through the refiner will be restricted.

The kilowatt meter or ammeter should be in an easily viewed spot so that the operator can adjust the handwheel to load the refiner.

Check the pipe or conveyor connector to the refiner feed spout; it should not be placing undue strain on the feed spout causing wear of the shaft sleeve and case packing.



Cutaway of double revolving disk refiner shows construction of bearings, disks, base weldment and other parts.



Single revolving disk refiner is essentially one half of the double disk type. This cutaway also illustrates the screw conveyor method of feeding.

Feeding

Methods of feeding that are used in high-yield applications include: (1) pumping chips or macerated chips and fiber at consistencies of 4 to 10 per cent, and (2) using screw conveyors.

Pumping has distinct advantages in that the feed can be kept very uniform and that the flow of chips or stock easily overcomes entry restrictions in both single and double revolving disk mills. Disadvantages might be the low consistency and the increase in power required at the lower consistencies.

The stock feed regulating valve should be placed as close to the refiner as possible and sized correctly so that it is never closed down to a narrow restriction when operating.

The screw conveyor is the more common method of feeding both single and double disk mills. Both use screw feeders to move the stock into the eye of the refining chamber except in cases of free flowing materials where chutes slide the material between the plates.

Where screw conveyors are used, care should be taken to size them to avoid surging in discharge. For instance, a 9-inch screw traveling at very slow speed is not nearly as satisfactory as a 6-inch screw operating at a more normal speed and neither is a small screw operating fast as satisfactory as a larger screw turning more normally.

Records and Inspections

Keeping records and scheduling inspections is of first importance. Use records as indicators of future action, noting any change or condition that would indicate a change of plates or part.

Schedules for inspection may vary from mill to mill but it should be frequent enough to catch any troubles in early stages. Some use daily inspections and some weekly. It is best to provide the inspector with check points:

1. Extremely hot or noisy bearings
2. Loose bolts
3. Oil leaks or stock leaks
4. Mal-functioning of the hydraulic system
5. Unusual noise or vibrations
6. Extreme motor temperature
7. Other unusual signs

Obviously, a man cannot tell the exact condition of a bearing or oil seal by feeling or listening or looking. But if the same man makes the same tour and check of equipment he will be able to see signs of trouble before they develop into serious problems. Regular checks of equipment are a must for mills who are pushing their equipment to the limit.

During plate changes, periodic overhauls, or at specific intervals check wear on the following refiner parts: plug wiper, distributor bar, seal ring. In the electrical equipment, check the condition of the synchronous motor brushes, check for proper exitation of synchronous motors, check all starter contacts and test the oil pressure switch on hydraulic units.

Lubrication

Three types of lubrication have been available on refiners: grease, oil mist and forced oil. However, on the larger models forced oil lubrication is now supplied as standard. For certain applications and on smaller refiners, grease packed bearings are standard.

Regardless of the type of lubrication, the selection of the right oil or grease is vitally important. Due to the sliding friction in tapered roller bearings under high thrust loads, the use of an EP (extreme pressure) type lubricant is recommended.

For forced oil lubrication specify an EP type oil 320 SSU at operating

temperature. For grease lubrication, ask for an EP anti-friction type.

Do not over-grease or over-oil. As much damage can be caused by an excess lubricant as too little.

The packing around the shafts should be greased every shift or so. A grease fitting is provided on each stuffing box where the shaft passes through the case. Sufficient grease should be added to prevent stock and liquor from following shaft out. Packing should be kept just tight enough to keep the packing against the shaft.

For grease-lubricated bearings, bearings should never be filled with grease more than half full. Grease lubricated bearings should be repacked every six months and do not require addition of grease between repacking. Bearing housings are not provided with grease fittings, and alteration is not recommended.

Should bearings begin to run extremely hot, check for over-grease condition by removing grease fitting from bearing housing (if one has been installed), allow excess grease to escape and replace with plug. End caps of bearing can also be loosened to allow excess grease to seep out. Tighten end cap and check bearing temperature again.

On oil-lubricated bearings, quantity of oil going to each bearing should be no more than one quart per minute. When starting the refiner, run oil system for no more than one or two minutes before starting refiner motors. When shutting down, allow the oil system to operate until the motors have come to a stop; then shut off immediately to prevent oil from accumulating in bearings.

The oil hydraulic system's operation and pressures should be checked daily. Under normal operating conditions, change oil at least every six months and clean suction strainer. If oil becomes contaminated for any reason, change oil immediately.

The oil hydraulic system on double revolving disk machines both lubricates the machine and controls the movement of the disk. Oil pressure of the bearings should be between 35 and 45 p.s.i. The pressure for the hydraulic cylinder should be in the 250 to 400 p.s.i. range depending on the difficulty of defibering. If the stock is easy to refine, a minimum amount of pressure will hold the disks in position. Because all refiners have a positive stop on the moveable disk, the disks will not come together if feed should stop for any reason or if the hydraulic unit should fail.

As a safety device, should the oil pressure to the bearings fall below 18 p.s.i., a pressure switch stops the main refiner motors to prevent bearings running without oil.

The fitting for each shaft-case packing should be greased every shift. Packing should be kept just tight enough to keep it against the shaft.

Changing Plates

When asked about the amount of time required to change a set of plates, we generally say approximately two hours. Several customers tell us they can do it in half the time and we shall pass along some suggestions they have made for maximum speed.

Using the same team of two men for each plate change seems to work best since they can learn to do the job smoothly. One man lays the new plates out face down and arranges them in sequence indicated on the back of each segment. These are installed in sequence because they have been balanced in this order.

When changing plates, lay out the new set face down in the order indicated by numbers 0,0; 1,1; 2,2; etc. These must be installed in sequence since they have been balanced in this order.

The other man removes bolts from one half of the upper case and both lift it off. Both men loosen all plate bolts and remove two of the three in each plate segment, one man working on each disk. In order to recover any bolts or nuts dropped, it is important to use a canvas or slip a piece of sheet metal into the bottom of the case.

A wooden wedge will do nicely to hold the disk from moving after the first plate is removed. Slip it between the disk and the lower case.

After one or two plate sections are removed on one disk start removing from the other to give yourself maximum clearance.

When the plates are all removed, clean the face of the disk thoroughly. Be sure that every bit of dried pulp, rust or scale from the face of the disk and the flange has been removed before inserting the plates. Plates are ground to close tolerances so that no appreciable crack is left between segments.

When installing the new set of plates, put in 4 or 5 segments on one disk, then using the space left open, put in place the 6 segments of the other disk, and finally, finish up the first disk. When putting the plates in place, snug up the bolts loosely so that the last plate will go in easily.

Tighten all nuts using about 1000 inch-pounds or using a 14- to 16-inch wrench pulling with 60 to 70 pounds pressure. Be sure to remove the canvas or metal piece under the refiner. Replace the case and bolts.

You can now start up the refiner and put it back into production. Because of the close tolerances of the plates, a run-in period is not necessary.

Major Overhauls

Major overhauls are covered thoroughly in the refiner's instruction book. Do not attempt a major disassembly without consulting the manufacturer's recommendations in this book. If you do not have one, ask for one.

In your mill's Extensive Preventive Maintenance Program a general overhaul is recommended. This should cover: Cleaning the motors; cleaning the bearings and if they are grease lubricated, repack them; checking level of machine; checking parallelism of disk; and replacing worn parts.

A two-man team, one man working on each plate, speeds plate change, together loosening plate bolts and removing two or three in each segment.

▼ Remove a segment from one disk and then remove plates from other disk to give maximum work space between disks during a plate change.

When the refiners are being disassembled, leave the lower half of the bearing housings bolted and doweled in place so that parallelism of the disks will not be changed. Check parallelism after the refiner is assembled but with care, disk parallelism of the Bauer refiner either single or double disk design will not change.

Rotating parts that we ship for replacement are balanced at the factory and, therefore, can be added to the rotating assembly without fear of unbalance.

Clearance between seal ring and renewable ring should not exceed .025 inches. In refining dry fiber and starch, clearances should not exceed .045 inches.

Worn plug wipers may cause erratic surge loads on the refiners by not properly wiping the edge of the renewable ring and erratically forcing the stock into the eye of the refiner. If this condition exists, replace the plug wiper.

If the refiner is damaged for some reason and an overhaul is required be sure to check the following when reassembling:

1. Level of base
2. Parallelism of disks
3. Head run-out
4. Clearances of seal ring-renewable ring, plug wiper
5. Instruction book for procedure

Replacement parts are readily available from the manufacturer. When ordering, always give serial number of the machine and use repair parts description of the part from the instruction manual.

For your own spare parts inventory, you will have to determine just how much should be carried and exactly what parts are most often required. Generally, we recommend these spares:

1. Plates
2. Plate bolts
3. Bearings
4. Renewable ring
5. Sleeves
6. Oil seals
7. Oil pump repair kit

Should you require the help of a manufacturer's serviceman, one is usually available to you at all times.

Role of Maintenance

An industry that relies so heavily on 24 hour per day machinery must be maintenance-conscious from operator to chairman of the board. Maintenance of pulp and paper mill equipment must be given the same careful consideration as labor relations, new plant sites and marketing strategies. Sounds unrealistic? Not at all. We found that a great many of our customers form maintenance policies at the top and then make sure they are carried out through proper management.

It may be surprising to know that well-organized maintenance programs are not limited to large corporations. Many of the best, most comprehensive, and yet not costly, programs are carried by medium and small tonnage mills.

One semi-chemical mill in New York State planned their maintenance personnel before the mill was completed. Today, through a simple card system, the mill can tell how many of each spare part is in stock, frequency of use, minimum stock, etc. From records kept at each refiner the operators and maintenance people can determine exactly the life of each set of plates, tonnage processed by each set, part replacement and if a part or condition is becoming a chronic problem. Maintenance department regularly inspects, lubricates and services each machine according to a schedule. It is a pleasure for a manufacturer to send a serviceman to such a mill because almost every cause for trouble is quickly determined and corrected.

This mill, as have many others, held an intensive training session for operators and maintenance people prior to the mill's start-up. We provided instruction materials, diagrams, a training film on the operation and plate change of the refiners and qualified men to instruct.

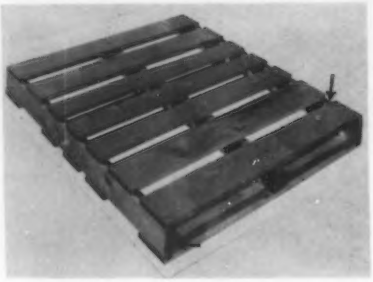
Besides an initial training, we recommend at least annual refresher courses, more, if personnel turn-over requires it. The maintenance superintendent should keep in contact with manufacturer, preferably through the company's representative who can provide new information, help on diagnosis of refining problems, cards for refiner plate and part records, and 16 mm sound movie of recommended refiner operation and plate change.

NEW EQUIPMENT & SUPPLIES

Plastic Coated Steel Straps Extend Pallet Life

Costing just a little bit more than standard warehouse pallets, Signode Super-Strip pallets are said to last more than twice as long. Other features of the pallet include two and four-way entry, elimination of snagging, and simple construction.

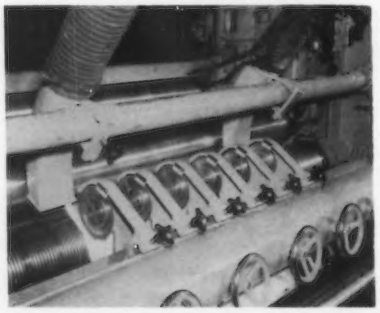
The Signode pallet is a wooden warehouse pallet that has been reinforced with a specially made ¾ inch x .035 inch plastic coated steel strapping. The strapping has been designed and specially treated to bend well and be nailable. The Super-Strip Pallets may be purchased from Signode licensed pallet manufacturers throughout the United States and Canada. For further information write Signode Steel Strapping Co., 2600 North Western Ave., Chicago 47, Ill.



First in U.S. with German Pneumatic Winder

Installation and start-up of the first Jagenberg pneumatic winder in an American paper mill has just been completed at the Tyrone, Pa., mill of West Virginia Pulp and Paper Co. Representatives of the American Paper and Pulp Co., Inc., of New York, distributors of the German-made equipment, said the winder is the first of its type to be installed in this country, although more than 100 winders of this design are currently in operation throughout the world.

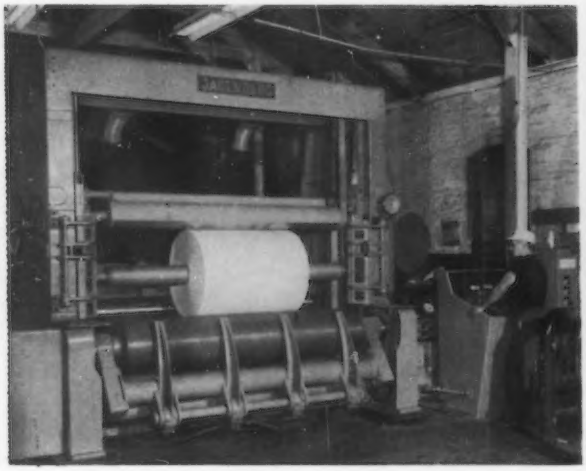
The winder has a trimmed width of 80 inches and can unwind from parent rolls up to 88 inches wide. It can slit webs down to 4 inches in width, run up to 4000 f.p.m. and has a maximum rewind diameter of 60 inches. At Tyrone the equipment is being used as a rewinder for slitting envelope grades into narrow rolls as well as for general salvage work on Tyrone's entire line of coated and uncoated papers.

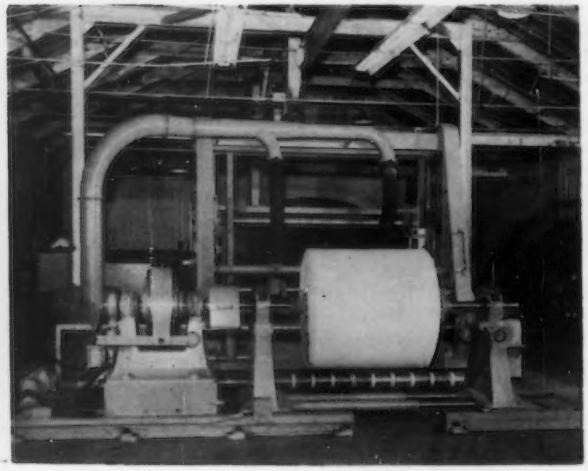


The pneumatic winder features a motor-operated adjustable unwind with oscillating mechanism and a water-cooled brake. Constant web tension is maintained by a dancer roll type tension control. Slitting is done by Jagenberg's "Multi-Shear" slitting system which combines the clean cut of the rotary shear with the setting ease approaching that of a score cut. Since the slitters are located very close to the wind-up, the spreader bar is ahead of the slitters rather than behind it. The rewind shaft is not held by brackets, but guided within hardened steel channels, the front member of which swings open like a gate. The winder does not require a separate lowerator, as a cradle-type lowering device is built into the machine. To vary the winding hardness and to enable soft windings when necessary, the Tyrone winder features a special shaft counter loading device.

All operations of the Jagenberg pneumatic winders other than the drive are performed by air. The air-operated features include: The unwind brake, tension control, air jets for threading slitter engagement, shaft counter loading, riding roll counter loading, roll ejector and roll lowering device. Another feature of the equipment is that all fly rolls on this winder are driven.

While the installation at Tyrone is too recent for final evaluation, clean straight sided rolls have been produced to varying degrees of winding hardness in accordance with Westvaco's specifications. Jagenberg pneumatic winders are made by Jagenberg-Werke A. G., Duesseldorf, Germany.





Vibration Eliminated in Air Cooled Compressor

An air-cooled compressor, designed for the first time in an X-shape which is said to virtually eliminate vibration and require less maintenance, was introduced by Worthington Corp., Harrison, N.J. The X-shape has been achieved by a short stroke design with reduced cylinder overhang and by use of a wide stance base which cuts vibration considerably. As a result, it is claimed that there is less internal strain, thus increasing the cooling efficiency and reducing wear and maintenance.

The compressor will be manufactured as a belt driven model and also in a Monobloc arrangement. In the Monobloc arrangement, the compressor and the motor form an integral unit. The motor frame is bolted directly to the compressor crankcase and the compressor crankshaft supports the motor rotor. There are no exposed moving parts. This means that complete safety is achieved without the need for special guards or shields. The Monobloc model is a two-stage compressor.

The one piece compressor connecting rod eliminates the need to assemble and fit bushings, bearings and shims. Made of aluminum, it helps dissipate heat away from the wrist pin and crankpin bearing surfaces. In addition, there is less weight to counterbalance.

All elements of the valve are new. Only two valve plates and corrosion proof, stainless steel valve strips make up the entire valve service for each cylinder.

A plasticized silicon-treated paper is being used as a filter and, according to tests, will keep out over 99 per cent of the dirt.

In the two-stage models, an aluminum first stage piston is balanced by a small cast iron second stage piston. Phosphate treated compression rings are tapered for fast cylinder wall break-in. The crankshaft is of ductile iron. The crankpin surface is flame hardened for maximum wear resistance. End play is adjusted by means of lock nut; no shims are needed, states the manufacturer. A multi-finned tube type intercooler is located directly in blast of the cooling air.

The belt driven compressor will be available in bare, base, and tank mounted models in ratings from 1½ to 15 h.p. and pressure from 60 to 250 p.s.i.

The X-shaped Monobloc compressor is available in 1½, 2, 3, and 5 sizes in tank mounted models, and for systems with existing air receivers, it is available with a mounting bracket as a base mounted unit. Motors are designed to meet NEMA B requirements, and are available for single phase, 60 cycle, 115/230 volts, or three phase, 60 cycle, 220/440 volts.

Machine Test Smoothness, Porosity on Many Papers

Bendtsen is now offering its 3-tube smoothness and porosity tester with a range of 0 to 3000 ml. per min. A wide range of papers can be tested by switching the changeover cock to feed the airflow through the proper tube without changing the manostat weights. Even hardboard can be measured merely by ordering a special smoothness gauge. No matter what the range of the product, its smoothness and porosity can be measured instantaneously, emphasizes the instrument's distributor, Robbins Instrument Co., Inc. The address is 110 West 30th Street, New York 1, N. Y.

Even if it becomes necessary to change a manostat, less than 15 seconds are required. Bendtsen manostat construction makes possi-

(Continued on page 54)

A UNIQUE CHECK VALVE THAT'S UNSURPASSED IN WATER, AIR, OIL OR GAS SERVICE

Technocheck©

OUTPERFORMS • OUTWEARS OTHER VALVES • COSTS LESS TO MAINTAIN

In field service in a wide range of water, gas, air and oil applications, Technocheck's performance and reliability are unsurpassed. Its exclusive design eliminates valve seats. Tight sealing, low pressure drop and long life with low upkeep are some of its important characteristics.

SCHEDULE OF STANDARD VALVE SIZES

GENERAL DESCRIPTION	PSI	SIZES
Cast Iron, Flanged	125	4", 6", 8"
Steel, Male Threaded Ends	150	1½", 2", 2½", 3"
Steel, Flanged	150	3", 4", 6", 8"
PVC, Male Threaded Ends	125	1½", 2", 3"
PVC, Flanged	125	2", 3"
PVC, Flanged	50	4", 6", 8"

We invite inquiries on other sizes and in special materials.

Techno Corporation Dept. PTJ
16 West 5th Street, Erie, Pa.

U.S.I. SERVICES THE PAPER INDUSTRY WITH TECHNICAL LAB ASSISTANCE...

IN PACKAGING – From studies such as this test of heat seal strength, U.S.I.'s Polymer Service Laboratory develops recommended procedures for all aspects of polyethylene packaging.

IN PULPING – Tech Service Engineer at U.S.I.'s laboratory-scale pulp and paper "plant" determines brightness of a hand sheet he has made from customer's pulp, on Hunter Multipurpose Reflectometer. He will also test it for tensile and bursting strengths, folding resistance.

in pulping
in converting
in packaging

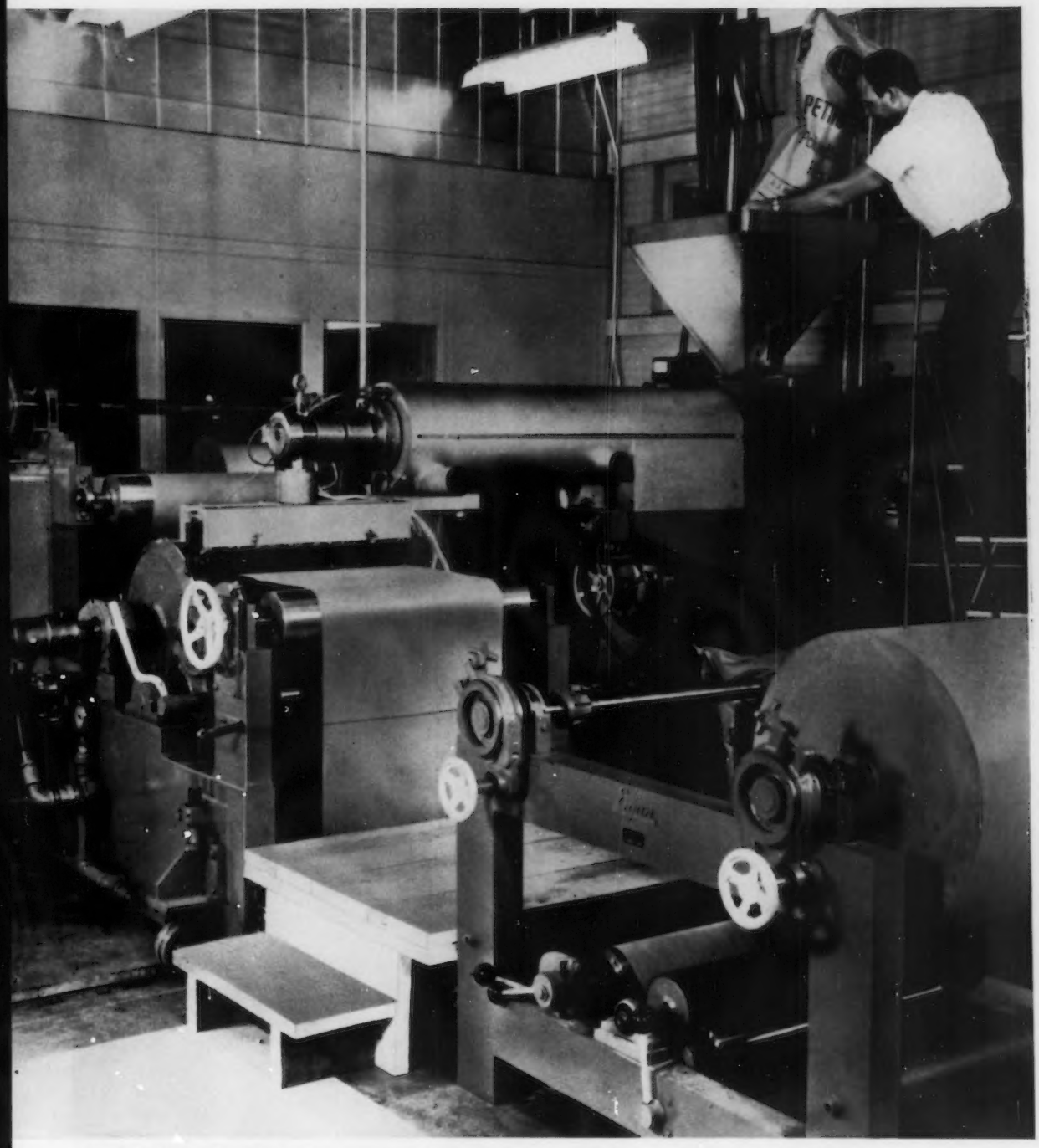
Whether you're pulping, converting or packaging paper products, U.S.I. has a laboratory and staff devoted to technical service in your field. Its job: to see that U.S.I. products for the paper industry give you the results you need in your operation.

U.S.I.'s pulp and paper laboratory — built eight years ago when U.S.I.'s Huntsville, Alabama, chlorine and caustic soda plant began operation — is a miniature paper plant, complete with auxiliary testing equipment. Here our engineers work on bleaching and assist with other applications of U.S.I.'s chlorine, caustic, ammonia, sodium peroxide . . . determine systems, techniques, types and concentrations of chemicals so that customers will know how to produce the brightest pulp with minimum fiber degradation.

Another lab at Tuscola, Illinois, is staffed with experts on polyethylene technology—including coating of paper and board, and packaging of paper products for the consumer market. They have equipment to duplicate commercial production and testing techniques . . . to tackle any problem involving an application for PETROTHENE® polyethylene resins.

A vital part of the Polymer Service Laboratory's work is development of new polyethylene paper coating and paper products packaging techniques along with design of necessary equipment.

Write or call for more information on how these services can work for you in improving your products . . . expanding your markets.



IN CONVERTING – Duplicating commercial equipment in everything but width, this coating machine at U.S.I.'s Polymer Service Laboratory is a key factor in developing new polyethylene resins for specific substrates. Latest products to come out of such work are three new PETROTHENE® resins designed for paper coating applications.

U.S.I. INDUSTRIAL CHEMICALS CO.
Division of National Distillers and Chemical Corp.
99 Park Ave., New York 16, N. Y.
Branches in principal cities

CHLORINE • CAUSTIC SODA • SODIUM PEROXIDE • AMMONIA • PETROTHENE® POLYETHYLENE

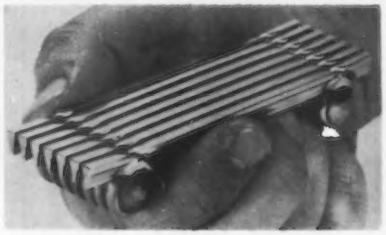
(Continued from page 51)

ble this quick shift that eliminates the time-consuming breaks in a continuous series of tests.

Like the two-tube tester, the 3-tube machine works on the airleak principle. By using a specially-designed air compressor, a low pressure flow of uncontaminated air at unvarying pressure is provided for the rotameter tubes. When testing smoothness, the influence of porosity is said to be entirely eliminated. This feature makes possible separate readings on both sides of the test paper.

Wedge-Wire Screen Is Self-Cleaning

A wedge-wire screen made of wire with thinner profiles than previously available is being introduced by



Cross Perforated Metals, National-Standard Company, for washing, screening, and dewatering. The high, narrow profiles of the wedge wire permit more wires per area of working screen surface than other shaped-wire screens, increasing percentage open area and increasing screening capacity, reports the company. Rima screens are made of stainless and carbon steels. They are furnished in rectangular, oblique angled, round and oval beds with sharp or round bends. Conical segments, cylindrical troughs and many other special shapes are available. Rima is a registered trade-mark of Hein Lehman and Co., Germany, and is distributed in the United States exclusively by National-Standard Co.

Screen wires are available in several profiles, including slanting tapered, tapered, flanged, and diamond. The profiles, it is claimed, eliminate blinding and clogging because any particle that passes the top will quickly clear the entire opening. Slit widths down to 0.002 inches can be furnished. Spacing lugs provide rigidity in the screen, prevent lateral deflection, and preserve uniform slit spacing.

Starch-Resin Binder System Offered

Feasibility of starch-resin binder systems for clay coating of paper and board has been demonstrated through research at National Starch and Chemical Corp.'s Paper Division laboratories, the company announced. This development was described by Leonard J. Wood, Paper Division manager, as a significant advance.

Starch-resin combinations, Mr. Wood said, produce coatings with improved print qualities as well as markedly better calenderability and glueability. He said that these could be achieved with the system at lower binder costs.

Starch-resin formulas worked out thus far consist of National's Resyns 1103 or 2203 in combination with Kofilm, the company's acetylated starch derivative. Both of these resins are compatible with starch, require no further stabilization and impart improved glueability to the finished board.

Tapioca Flour Features High Uniformity

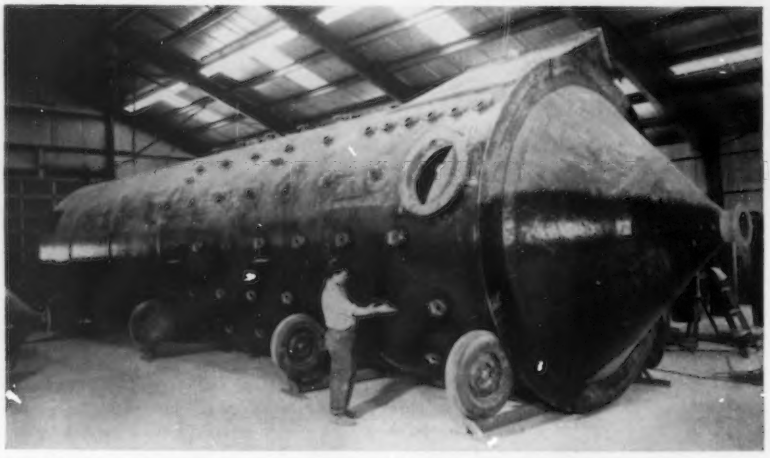
An improved tapioca flour for the paper and corrugating industries has been announced by Morningstar-Paisley, Inc., New York, N.Y. Called Thai Crown Tapioca Flour No. 61, the material is pre-tested in Thailand to assure compliance with standards, and all shipments are tested on arrival in the U.S.A. to assure uniformity of the flour. Thai Crown No. 61 is claimed to have a high initial viscosity with good viscosity retention and excellent tolerance to borax and caustic.

Thai Crown No. 61 is normally used as a raw portion of corrugated starch process, but it can also be used as a carrier. The material is ideal for applications where brightness or whiteness is necessary. It reacts well to enzyme modifications, where the raw starch is modified to reduce its viscosity.

Properties of Thai Tapioca No. 61, reported by Morningstar-Paisley, are as follows:

Dry Appearance	Cream
Specks	Some
Mesh	Powder
Moisture	10%-13%
Ash	0.13%-0.20%
Pulp & Fiber	½-1 cc.
Cleanliness	Fair
Initial pH	3.50-4.50
Acid Factor	5.50-6.50
Odor	Typical

Further information can be obtained by writing Morningstar-Paisley, Inc., 630 West 51st St., New York 19, N. Y.



REPORTED to be the largest single unit of industrial equipment ever fabricated from reinforced plastic, this huge fume scrubber, over 47 ft. high and 10 ft. in diameter, has been designed and engineered by Buffalo Forge Co. The giant apparatus handles effectively 42,000 c.f.m. of dust-laden gases. The only metal used is in supports and external fasteners. Shown here are conical section, individual spray nozzle connections, entrance and inspection ports, as well as mounting flange. The scrubber is made of Hetron 92 polyester resin produced by the Durez Plastics Division of Hooker Chemical Corp.

White carton makes a beautiful picture

The natural color and texture of luscious fruit contrast strikingly with the bright white background of corrugated kraft. So do product, company identification, and brand name when carried as part of this "new look."

That's why the shipping carton is becoming more than just a container to carry the goods to market. In sparkling white, it attracts attention in shipment—and at the end of the line where sales are made.

It takes proper increase of TITANOX® white titanium dioxide pigment in coatings and liners to obliterate drabness and truly present the new look that affords sharp contrast for merchandising messages.

To help you gain the full benefits of white pigmentation is our most important job. This applies to *all* types of paper which depend on titanium dioxide white pigments for just the right combinations of whiteness, brightness, and opacity. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; offices and warehouses in principal cities. In Canada: Canadian Titanium Pigments Ltd., Montreal.

TITANIUM PIGMENT CORPORATION
SUBSIDIARY OF NATIONAL LEAD COMPANY

TITANOX

7207-C

Cady Exact Hand Model Micrometer

FOR POCKET/DESK/LAB

Cadytest Instruments are designed for accuracy in determining or comparing thicknesses, basis weights, or bursting strengths. They are available in stock models or specials for specific tasks.

Write for Brochure & Prices

E. J. Cady & Company
Manufacturers
676 N. Harlem
River Forest, Ill.

Cady Burst Tester Meets ASTM & TAPPI Standards

Prices of Fibers

MARKET WOOD PULP

SECOND QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$ 82.50/ 90.00	$82.50/ 90.00	§$90.00/ —	§$80.00/ —	§$90.00/ —
Bleached Gw'd	$ 97.50/100.00	$97.50/100.00			
Kraft, Blchd.	‡152.00/160.00				§157.50/ —
Kraft, Blchd. Hdwd.	152.00/ —		140.00/ —		
Kraft, Semi-bleached.	140.00/145.00				
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	‡150.00/155.00	‡150.00/155.00	*155.00/ —	*155.00/ —	155.00/ —
Sulphite, Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd.	135.00/ —	135.00/ —	†135.00/ —	*135.00/ —	
Sulphite, Unb'l. Gl'sn		140.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

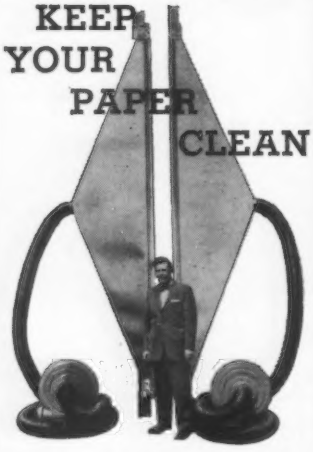
§ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances.
‡ Depending on Brightness.

COTTON LINTERS

F.O.B. OIL MILLS
WEEK ENDED MARCH 22

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	n.a.
3	$7.50/7.00	$8.50/7.75	$7.50/7.00	n.a.
4	7.00/6.25	7.25/6.25	6.50/6.25	8.50/ —
5	6.25/5.75	6.00/5.50	6.00/5.50	8.00/7.00
6	5.75/4.75	5.25/5.00	5.25/5.00	6.50/4.50
7	4.75/4.25	4.50/4.00	4.75/4.00	4.25/4.00

KEEP YOUR PAPER CLEAN



Doyle PAPER CLEANER

- Assures manufacture of cleaner paper.
- Removes shreds, slitter dust, etc.
- Fully automatic in operation.
- Improves quality of paper products.
- For Sheets or Webs of any size.

WRITE FOR PAPER MILL BULLETIN PM-45

J. E. *Doyle* COMPANY

1220 West Sixth St. • Cleveland 13, Ohio
Telephone: CHerry 1-3939

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	Mar. 28	Mar. 28	March	March
No. 1 Mixed Paper	$ 7.00/ 9.00	9.00/ 11.00	8.00/ —	12.00/ 13.00
No. 1 News	14.00/ 15.00	14.00/ 16.00	16.00/ —	14.00/ —
Overissue News (Lg. size)	13.00/ 15.00	13.00/ 15.00	21.00/ —	19.00/ 20.00
Mill Wrappers	19.00/ 22.00	13.00/ 15.00	11.00/ —	14.00/ 15.00
Old Corrugated Containers	22.00/ 23.00	21.50/ 22.00	20.00/ —	23.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	30.00/ —	55.00/ —
New Double Kr. Ld. Corr. Cuts	32.50/ 35.00	35.00/ —	32.50/ —	35.00/ —
(Semi-chem. medium)	45.00/ —	45.00/ —	42.50/ —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	57.50/ —	— / —
New Br. Kraft, Env. Cuts	70.00/ 75.00	70.00/ 75.00	62.50/ —	55.00/ —
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	62.50/ —	55.00/ —
New Br. Kr. Bag Waste Unprintd.	60.00/ 65.00	65.00/ 75.00	60.00/ —	60.00/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	25.00/ 30.00	22.00/ —	32.50/ 35.00
White Newsblanks	50.00/ 55.00	50.00/ 55.00	40.00/ —	60.00/ —
No. 1 Soft White Shvs.	60.00/ 65.00	57.50/ 60.00	60.00/ —	70.00/ 75.00
Super Soft White Shvs.	65.00/ 75.00	75.00/ 85.00	70.00/ —	— / —
Hd. White Shvs.	85.00/ 90.00	90.00/100.00	85.00/ —	95.00/ —
Hd. White nv. Cuts	100.00/105.00	105.00/110.00	90.00/ —	113.00/ —
Col. Tab. Cards	45.00/ 47.50	45.00/ 47.50	50.00/ —	40.00/ 45.00
Manila Tab. Cards	65.00/ 67.50	65.00/ 67.50	70.00/ —	70.00/ 75.00
No. 1 Col. Ledger	37.50/ 42.50	37.50/ 42.50	42.50/ —	29.50/ 32.50
White Ledger	50.00/ 55.00	52.50/ 57.50	52.50/ —	55.00/ —
Mixed Book & Mag.†	22.00/ 25.00	— / —	14.00/ —	— / —
No. 1 Books‡	19.00/ 21.50	17.00/ 19.00	30.00/ —	16.50/ 18.50

† Includes Time & Life; no coarse groundwood. § Not to exceed 10% of groundwood.

PTJ NEWS OF SUPPLIERS

S. G. Dukelow

W. P. Davenport

Bailey Meter Co., Cleveland, Ohio, has announced two new managerial assignments. On April 1, S. G. Dukelow, manager of the New Orleans district, took over managership of the San Francisco district. He succeeds V. A. Rumble who has retired after 37 years with the company—30 of them as San Francisco manager. W. P. Davenport, an industry specialist in the Pulp & Paper Division, East Orange office, has been named manager of the New Orleans district.

Mr. Dukelow joined the company as an engineering trainee in 1941. He was named manager of the New Orleans district in 1947, after having gained experience as a sales-service engineer in the Chicago, Denver, and Houston district offices. A graduate of Kansas State College, he holds a B.S. degree in mechanical engineering.

Mr. Davenport joined the company in 1937 as an engineering trainee. He worked in the Philadelphia and New York district offices prior to being assigned to the East Orange office (part of the New York district). He is a 1937 graduate of Penn State and holds a B.S. degree in mechanical engineering.

Brandon Sales, Inc., is arranging to terminate its representation of Morden Machines Co. according to K. E. Fryfogle, president of Brandon Sales, Inc., Greenville, S. C., and R. Burke Morden, president of Morden Machines Co., Portland, Ore.

Brandon Sales, Inc., is the exclusive selling agent for Brandon Dryer Felts in the entire United States and for several years has also represented Morden in the southern territory. Brandon recently augmented its selling staff but still find that the increase in its dryer felt business makes it mandatory that it devote its full time to Brandon Dryer Felts.

Brandon will continue to represent Morden until Morden arranges other suitable representation in the South.

Jefferson Chemical Co., Houston, Tex., has named Walter P. Krause as supervisor, plant and sales technical service section of its Austin Laboratories. In this position he will be in charge of customer service work requested by the marketing department as well as experimental work designed to assist the manufacturing department in solving plant problems. Mr. Krause is a chemical engineer from the University of Illinois.

Midland-Ross Corp., New York, N. Y., announces that George Drexell Carr has joined the pulp and paper mill sales staff of J. O. Ross Engineering Division.

A 1942 Civil Engineering graduate of the University of Texas, Mr. Carr worked in the aircraft design department of Curtiss-Wright, Columbus, Ohio, until 1946 when he joined the Sturtivant Division of Westinghouse as a salesman in the Seattle office, and became the Seattle area manager in 1950.

Mr. Carr will team with K. H. Jones, P. Goldner and C. J. Guischard in forming a competent and complete pulp and paper mill sales staff in the New York office.

G. D. Carr

P. A. Halas

John W. Bolton & Sons, Inc., announces that Paul A. Halas of Chicago has joined the sales staff of the Machine Knife Division. Mr. Halas will cover the territory including Chicago and most of Illinois, Wisconsin, and sections of Indiana, Minnesota and Iowa.

Mr. Halas's varied background of experience is unusual in that he has had considerable shop experience in addition to doing both inside and outside sales work. After studying at Northwestern University, he worked for the Studebaker Corp. Following this, he handled administrative sales work for the Exide Battery Co. Prior to joining Bolton, he worked as sales engineer in Illinois and Indiana for Solar Chicago, Division of U. S. Industries, manufacturers of refinery process equip-

"What a complicated process just for mixing wood and water and then taking the water out again."

The NEW

ECONOMY

STOCK VALVE

Using the proper alloys with precision machined knife gate construction.

Check these ECONOMY advantages:

- √ **Highest strength ratio to weight.**
- √ **Easy to install**
- √ **Quality workmanship.**
- √ **Lowest cost for equal performance.**
- √ **Operated by hand, air cylinder or motorized.**

Write for NEW Bulletin #100 describing the complete line of ECONOMY stainless stock valves for the process industries.

ECONOMY

Equipment Company

Valve Division

4808 S. Hoyne Ave. • Chicago 9, Ill.

CHAS. T. MAIN, INC.

ENGINEERS

PROCESS STUDIES, DESIGN, SPECIFICATIONS, CONSTRUCTION SUPERVISION

PULP AND PAPER MILLS

STEAM, HYDRAULIC AND ELECTRICAL ENGINEERING REPORTS, CONSULTATION, VALUATIONS

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BOSTON, MASSACHUSETTS

CHARLOTTE, NORTH CAROLINA

Stadler Hurter

International Ltd.

Engineers • Designers • Consultants

Specializing since 1923 in all phases of design, modernization and expansion of pulp and paper mills from forest to finished product.

1501 ST. CATHERINE ST. W.

MONTREAL

NEW YORK • MEXICO CITY • PARIS • ZURICH

ment, water towers, storage tanks and high pressure vessels.

Mr. Halas will make his headquarters in the Chicago area.

The Borden Chemical Co., New York, announces construction of a new product development laboratory and a dry adhesives plant, coupled with the further expansion of existing synthetic resin and formaldehyde production at its Springfield, Ore., plant.

The project will involve a total capital investment of more than one million dollars. Capacity of the dry adhesives plant will be 10 million pounds per year. Ground will be broken for the new laboratory in early spring of this year. Expansion of existing production is under way, while the dry adhesives plant is still in the engineering-design stage.

Borden Chemical's Springfield plant produces a wide range of thermosetting adhesives, primarily for the local forest products industry and the West Coast packaging industry. Included are urea, resorcinol, resorcinol-formaldehyde, urea-formaldehyde and phenolic resins, in addition to lubricants and modifiers for wood gluing, and powdered catalysts.

The modern, fully-equipped product research center will be the chemical company's eighth in this country. The company also maintains six technical service laboratories at various plant sites throughout the United States, and a central research laboratory in North Philadelphia, Pa.

The choice of Springfield, Ore., as an important new Borden laboratory site was based primarily on its central location in the heart of the West Coast forest products industry, Augustine R. Marusi, president said, and also because of its close proximity to the research centers at both The University of Oregon in Eugene, and Oregon State College at Corvallis. He added that the current equipment expansion is designed to facilitate further capacity increases in the future with a minimum of capital outlay. The present plant includes many large resin reactors including two with a batch capacity of from 60,000 to 100,000 pounds each.

Technical Translation Bureau

Swedish — Norwegian

Finnish — German

French — Estonian

P. O. Box 784

Cornwall, Ontario, Canada

J. F. Staley

D. J. Kramm

Southworth Machine Co., Portland, Me., announces the appointment of James F. Staley to resident district manager of paper mill sales for the Mid-West territory. This territory includes Illinois, Indiana, Minnesota, Upper Michigan, Ohio and Wisconsin.

Mr. Staley, former industrial engineer with West Virginia Pulp and Paper Co. and head of industrial engineering for the Eastern Fine Paper and Pulp Division of Standard Packaging Corp., comes to Southworth with an extensive background in finishing development and industrial engineering.

Mr. Staley's residence will be in the Appleton, Wis., area. He is the latest member to join Southworth's expanding Paper Mill Division headed by Leslie S. Pearson, vice president and manager.

Traylor Engineering and Manufacturing Co., division of the Fuller Company. has appointed Douglas J. Kramm lime and chemical kiln sales-engineer. Mr. Kramm will be located in Traylor's main offices in Allentown, Pa., and will assume his new duties at once.

Since 1952, Mr. Kramm had been district sales manager for Traylor's San Francisco office and prior to that date had been in equipment sales in an allied field. A graduate of the University of California in 1941 with a degree in mining, he entered the U. S. Navy that same year and served until 1946.

Warren Pumps, Inc., Warren, Mass., elected three new vice presidents at the annual directors' meeting.

Howard L. Glass, elected vice

president in charge of federal-marine sales, has been with Warren 27 years, most recently serving as manager of federal-marine sales.

Walter B. Eklund, elected vice president in charge of operations, has been with Warren 22 years, most recently serving as operations manager.

Charles F. Dexter, elected vice president in charge of industrial sales, has been with Warren four years, most recently as manager of industrial sales.

Officers re-elected by the directors were: chairman of the board, George R. Rowland; president, Donald B. Gilman; and vice president and general counsel, Robert J. Whipple. H. Ward Hathaway and John G. Rearick were designated consultants to the board of directors.

Charles E. Bell submitted his resignation as clerk of the company. Elected clerk of the company was Miss Janet E. Walker. Arthur T. Messom was re-elected treasurer.

Dow Chemical Co. has named G. J. Williams to a new position as assistant general sales manager. Mr. Williams has held the post of sales manager of the plastics department since 1958.

Arnold A. Butterworth will succeed Mr. Williams in the plastics department position. Mr. Butterworth has served as assistant to the sales manager, plastics department, since 1957.

Carpenter Steel Co., Reading, Pa., has appointed Lawrence R. Scharfstein, a former Westinghouse Electric Corp. corrosion engineer, supervisor, corrosion research.

In his new position, Dr. Scharfstein heads a corrosion research group for developing new methods to obtain accurate corrosion data for Carpenter alloys. He is also in charge of routine, continuous corrosion tests performed on Carpenter alloys as a part of the company's quality control program.

Hyster Co., Portland, Ore., has appointed Walter A. St. Clair for the past four years assistant sales manager of the Industrial Truck Division, as sales manager of that division.

Mr. St. Clair was named to the company's top Industrial Truck Division sales post vacated last year when Robert F. Moody was elevated to general sales manager. The promotion puts Mr. St. Clair in charge of Hyster industrial truck sales activities in the United States and Canada.

A. E. Staley Manufacturing Co., Decatur, Ill., has promoted H. H. Hise, purchasing agent, to division manager, according to Roy L. Rollins, vice president.

This followed an announcement by E. K. Scheiter, president of the Decatur corn, soybean and chemical processing concern, that the company's purchasing organization would be given division status, effective immediately, "in recognition of the growing scope and importance of purchasing activities under Mr. Hise's management."

In his new position, Mr. Hise will continue in charge of the company's purchasing organization, which he has headed for the past 15 years and with which he has been associated during all of his 34 years with the company.

Purchasing was previously a department of the manufacturing division.

Also announced was the appointment of Kenneth P. Moore as manager of the personnel division.

Mr. Moore has been director of training since 1954.

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Feb. 20	Feb. 27	Mar. 5	Mar. 12	Mar. 19
1960	98.5	97.1r	97.3r	97.5r	95.3
	Feb. 21	**Feb. 28**	**Mar. 7**	**Mar. 14**	**Mar. 21**
1959	90.9	93.0	91.8	93.9	94.1

r Revised

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	96.7	97.9‡	—	—	—	—	—	—	—	—	—	—	—
1959	87.8	90.5	93.2	94.4	95.5	95.6	84.5	96.0	92.4	97.4	96.2	86.6	94.0

‡ Preliminary

COMPARATIVE YEARLY SUMMARIES

	1953	1954	1955	1956	1957	1958	1959	1960
Year to Date	94.9	94.1	95.9	100.8	96.0	88.4	90.1	97.2
Year Average	92.3	91.6	96.2	97.9	90.4	87.0	94.0	—

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Feb. 20	Feb. 27	Mar. 5	Mar. 12	Mar. 19
1960	96	91	94	94	94
	Feb. 21	**Feb. 28**	**Mar. 7**	**Mar. 14**	**Mar. 21**
1959	94	92	96	93	94

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	92	95	—	—	—	—	—	—	—	—	—	—	—
1959	89	94	95	94	96	96	83	97	92	97	94	80	92

† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING Mar. 19, 1960	LAST WEEK ENDING Mar. 12, 1960	CUMULATIVE TO DATE Jan. 1 to Mar. 19, 1960, incl.
% Activity	94%	94%	93%
Total	320,721	319,033	3,495,797
Containerboard—Domestic Use	167,544	167,925	1,812,510
Liner	114,295	113,807	1,215,230
Corrugating Material	48,867	48,744	541,681
Chip & Filler Board	4,382	5,374	55,999
Boxboard—Domestic Use	97,337	96,523	1,074,222
Folding	56,904	58,827	636,115
Set-up	11,742	10,961	127,448
Special Food Board	28,691	26,735	310,659
Other Paperboard	55,840	54,585	608,665
Containerboard Type	16,880	18,051	166,895
Boxboard Type	38,960	36,534	441,770
Total Orders			
Received	302,307	292,018	
Unfilled End of Week	441,526	459,954	

Knox Felts

KNOX WOOLEN COMPANY

CAMDEN, MAINE

America's First Manufacturer of Endless Paper Machine Felts

CUT PLANT MAINTENANCE!

Automatic
LUNKENHEIMER OILERS
eliminate costly hand labor!

Fig. 1834 Constant Level Oil Control

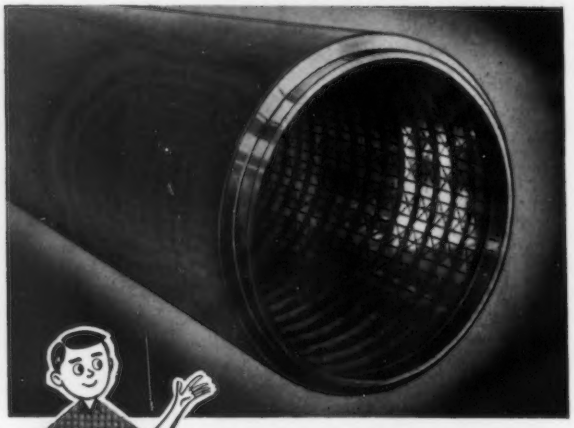
Fig. 1815 Globe Body Bottle Oiler

Labor costs are far too high to permit economical hand-oiling—yet valuable bearings must be protected against damage! Install Lunkenheimer Bottle Oilers, Oil Cups, or Constant Level Oil Controls to feed oil automatically—prevent over-supply, leakage, spatter. Request literature from your Lunkenheimer Distributor or write The Lunkenheimer Co., Box 360, Annex Station, Cincinnati 14, Ohio.

Fig. 1300 Sight Feed Oil Cup

L-257-30

LUNKENHEIMER
THE ONE *Great* NAME IN VALVES



Sinclair Dandy Rolls Give You
QUALITY PRODUCTION
at LOWER COST

Each Dandy Roll SINCLAIR produces, gives you maximum strength and accuracy of roundness that keeps your production standards high. For maximum speed and trouble-free operation, send us your requirements. We'll promptly submit a quotation.

THE SINCLAIR COMPANY
61 APPLETON STREET • JEfferson 2-9488
HOLYOKE, MASSACHUSETTS

Another Plant To Serve You

SHIP US IN KALAMAZOO

PACKING PLANTS
CHICAGO, ILL.
WASHINGTON, D. C.
CAMDEN, N. J.
KALAMAZOO, MICH.
LOUISVILLE, KY.

THOMAS PAPER STOCK CO.
1500 N. Hooker St. MO-4-5700 Chicago 22, Ill.

AMERICAN AND ENGLISH CLAYS

FOR ALL PAPER MAKING PURPOSES

ANGLO-AMERICAN CLAYS CORP.

(Formerly: English China Clays Sales Corporation)

6 East 45th Street, New York 17, N. Y.

PRACTICAL PAPER TECHNOLOGY

by William Bond Wheelwright

This book begins with a survey of "Progress in the Paper Industry" and ends with a list of books recommended for collateral reading. The intermediate chapters are entitled: "How to Judge Paper"; "Physical Aspects of Paper"; "Practical Manual and Visual Tests"; "Essential Facts About Papermaking"; "Coated, Glazed and Specialty Papers"; "Permanence of Paper"; "Paper Difficulties in Converting"; "Paper as a Medium for Printing"; "Letterpress Printing"; "Offset Lithography"; "Intaglio Processes."

Also a Supplement containing a Quiz Test on paper.

LOCKWOOD TRADE JOURNAL CO., Inc.
49 West 45th Street, New York 36, N. Y.

Send postage prepaid, Remittance with order.....copies.
Paper Technology, Price $1.75; Foreign Delivery—25c extra.
All New York City Orders are Subject to a City Sales Tax

Name .....

Street ..... *City and State*.....

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Jordan Shell and Plug Fillings

TRADE-MARK

POSITIVE

Reg. U. S. Pat. Off.

High Speed Disc Refiner

THE BAHR BROTHERS MFG. CO.

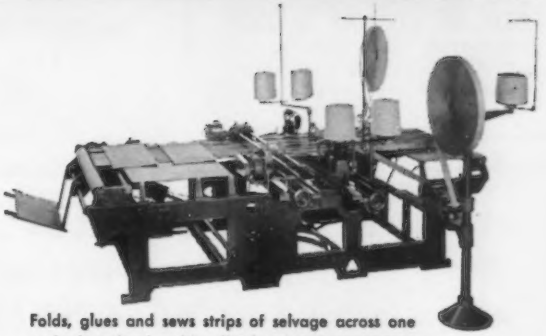
MARION, INDIANA, U. S. A.

New! single or double-end

SEWING MACHINES

with New "tape-over" sewing feature

HI SPEED



Folds, glues and sews strips of selvage across one or both ends of multi-wall tubes in one operation. Equipped to do "tape-over" sewing (selvage pasted over stitches rather than stitches going through the selvage). Can also do regular sewing (through selvage).

Write for details

ESTABLISHED IN 1892 POTDEVIN

POTDEVIN MACHINE CO. 223 North St. Teterboro, N.J.

Designers and manufacturers of equipment for Bag Making, Printing, Coating, Laminating, Gluing and Labeling.

A Stitch in Time Saves Nine...

Pulp, Paper & Board Mill Maintenance Based on actual in-plant experience and prepared by well known men in the industry, this text in 122 pages relates maintenance procedures and practices for kraft mills, semichemical mills, bleach fourdrinier and cylinder machines, stock preparation machinery and other mill equipment. Price $2.50 from

LOCKWOOD TRADE JOURNAL COMPANY,
49 West 45th Street, New York, 36, NY

Please send me postpaid ..... copy of PULP, PAPER AND BOARD MILL MAINTENANCE.

Name .....Title .....

Company .....Address .....

PAPER TRADE JOURNAL CLEARING HOUSE

Help Wanted

PAPER MEN

$5,000 to $50,000

SALES • PRODUCTION • TECHNICAL

Finding and landing THE ONE BEST JOB requires sound analysis, careful planning, proper contacts and skillful negotiation.

Paper men ourselves, and the only recognized professional specialists in the world in our particular field, we assist responsible paper men to accelerate their careers by uncovering and developing THE SPECIFIC SITUATION that most exactly fits the needs of each individual we serve.

If you seek to better yourself, and your performance to date entitles you to our endorsement, we can and will help you. Contact us in absolute confidence for information regarding procedure.

GEO. M. SUNDAY & ASSO.

PERSONNEL CONSULTANTS TO THE PULP, PAPER & ALLIED INDUSTRIES

6 East Monroe, Chicago ANdover 3-1970

TF

Help Wanted

ASSISTANT PAPER DEPARTMENT SUPERINTENDENT

Attractive present and future prospects with New York and Penn. Extensive experience required on operating and production problems with machines making board range of lightweight printing and converting grades. Paper and pulp school or engineering education preferred. Confidences respected.

Apply to Division Manager

New York & Pennsylvania Co., Inc.

Lock Haven, Pa.

A-11

DEVELOPMENT ENGINEER

We are looking for a chemical or mechanical engineer with an extensive pulp and paper process background.

The position is basically equipment development for the pulp and paper industry, however, a strong process background is essential.

This man should be capable of handling projects with only limited guidance and should have a minimum of three years mill experience.

Necessity for industry contacts will involve some travel.

Please forward complete resume including salary requirements to:

C. R. Farrell

DORR-OLIVER INC.

Havemeyer Lane

Stamford, Conn.

A-4

. . . WANTED . . .

For One of Our Oldest and Most Highly Respected Mfgrs. of

TECHNICAL & INDUSTRIAL SPECIALTY PAPERS

PROD. ASST. to the MFG. V. P.

$10,000 to $12,500 start

Client mill, whose motto is "Craftsmanship In Specialty Papers", offers a most unusual opportunity to a technically educated, practically oriented papermaker with proven management capacity who aspires to become a true craftsman of his trade.

Ideally, our man will be 35-45, with ten years or so experience in Fourdrinier operations making fine, medium fine or specialty grades. Preferably, his degree will be from an accredited papermaking school.

As Production Assistant to the Manufacturing Vice President, he will first familiarize himself with the mill, its products and operating procedures. He will then begin to assume administrative responsibilities covering all aspects of manufacture, with especial emphasis on production supervision. Ultimately, he may become general superintendent of a team noted in papermaking circles for its "technical know-how and scientific know-why, implemented by extensive research and pilot plant facilities" —a team that has built the equipment, processes and personnel to make specialty "tailor-made" papers in a variety, and from a variety of raw material, scarcely equalled anywhere in the world.

Make initial inquiry in writing to G. M. Sunday personally, enclosing picture and comprehensive resume covering vital statistics, education and chronological treatment of background and experience. Full confidence guaranteed. Telephone conference will follow, at which time full details will be revealed and arrangements made for personal interview at client's expense.

SUNDAY, INC.

Personnel Consultants to Management
Pulp, Paper and Allied Industries

6 East Monroe Street **Chicago 3, Ill.** **ANdover 3-1970**

A-4

MAINTENANCE ENGINEER

With 4 to 10 years experience in paper mill maintenance engineering. Engineering degree required, age to 35. Job duties will consist of providing technical assistance to maintenance organization, planning large scale jobs and supervising work groups. Starting salary based on qualifications, periodic merit increases. Good benefits, excellent location. Send resume to: Employment Supervisor, Kraft Division, West Virginia Pulp & Paper Company, Charleston, South Carolina. A-4

MECHANICAL ENGINEERS

Large paper mill in Florida has permanent openings in converting department areas for engineers with B.S.M.E. degree. Two to five years experience in Tissue or Kraft paper converting equipment preferred. Excellent benefit programs established. Give all past experience and qualifications in first resume to Box 60-64 care Paper Trade Journal. A-25

Technically trained graduate with at least five years experience in paper board production and quality control. Reply to Box 60-65 care Paper Trade Journal. A-4

Help Wanted advertisements continued on page 64

SUPPLIERS OF PAPER MACHINERY TO THE WORLD — RPM

ROSS PAPER MACHINERY CO.

265 PASSAIC STREET • NEWARK 4, NEW JERSEY

Cable Address: "JACKROSS Newark: N.Jer" HUMBOLDT 2-2177

CANADA — 199 BAY STREET, TORONTO, ONTARIO SOUTH — P. O. BOX 2065, MOBILE, ALABAMA

BAG MACHINERY
1—S&H 3½" to 10¼" face; 6" to 13" tube pull

BAG MACHINERY—MULTI-WALL
1—Potdevin 1 & 2 ply tuber; 5¼" to 14" face; 10¼" to 33" pull; w/motor & elec eye
1—Potdevin Bottomer 2" to 4⅞" width; w/motor & conveyor
1—S&W 1 to 4 ply tuber; PV, SOM, & POM; 10" to 24" face; 22" to 43" pull; w/15 hp VS drive

BEATERS
2—3000# Downingtown w/60" face x 67" dia roll

CALENDER STACKS
1— 80" P & J 7 roll; heavy duty
1— 82" Lobdell 5 roll
1— 86" Lobdell 5 roll
1—115" B-C 7 roll
2—124" Downingtown 5 roll & 6 roll
1—128" Downingtown 7 roll

CHIPPERS
1— 88" Murray 10 knife w/600 hp motor
1— 96" Murray 6 knife; A-F Brng.

COATERS
1— 24" Waldron Coater & Embosser
2— 40" Chapman Extrusion Type
2— 65" & 76" Mayers

COMPLETE MACHINES
3—Sandy Hill 81" trim single cyl. Tissue
1—M & W 72" Fourdrinier paper machine

CYLINDER MOLDS
2— 63" face x 36" dia w/rubber couches
1—104" face x 36" dia
1—107" face x 48" dia; A-F Brng
2—111" face x 36" dia; A-F Brng
1—131" face x 42" dia; A-F Brng
1—136" face x 54" dia; SS covering

CYLINDER WET ENDS
Downingtown single cylinder; 99" face x 48" dia.; 18" dia. couch

DRYERS—HYDROSTATICALLY TESTED

24" Dia.:
39—46" face; Chrome plated
1—156" face w/gear and steam joint

28" Dia.:
3— 70" face w/gears & bearings
3— 73" face w/gears & bearings
3— 76" face w/gears & bearings
3— 77" face w/gears & bearings
2— 84" face
2— 84" face w/accessories

36" Dia.:
1— 42" face
2— 44" face
2— 46" face
4— 70" face w/gears & bearings
11— 72" face w/gears & bearings
1— 74" face Lukenweld w/A-F Brng
1— 74" face w/gears & bearings
3— 75" face w/gears & bearings
9— 76" face w/gears & bearings
1— 77" face w/gears & bearings
1— 78" face w/gears & bearings
2— 80" face
5— 84" face
1— 88" face
18— 90" face; complete section
9— 92" face; complete section
1—138" face
10—160" face

42" Dia.:
1—110" face
40—118" face; complete section
1—120" face
1—160" face

48" Dia.:
57— 46" face; chrome plated
13— 82" face; complete section
5— 84" face
9—110" face w/frames & bearings
10—123" face w/gears, frames & bearings
1—128" face

DRIVES—ENCLOSED RIGHT ANGLE
1—Michigan 92½ h.p. ratio 10.1 to 1
1—50 h.p. Reliance VS with MG set & controls; 850-1200 r.p.m.
1—Beloit 65 h.p. Ratio 2.88 to 1
1—Phila. 28 h.p. Ratio 10.56 to 1

EMBOSSERS
1— 80" Hudson Sharp; A-F Brng
2— 62" Textile Machinery Co; w/drives

EXTRACTOR ROLLS—DOWNINGTOWN
2—139" face x 24" dia.; A-F Brng.
1—134" face x 24" dia.; A-F Brng.
1—128" face x 24" dia.; Complete Section

FILTERS—STEEL VATS
1— 6' face x 3' dia Dorr-Oliver
1— 10' face x 8' dia Oliver chem. sludge filter

FLAT SCREENS
2— 12 Plate IMPCO w/Dunbar Drives
1— 4 plate Tailing Screen

"HYDRAPULPER"
1—Dilts 16 ft. complete w/125 h.p motor, elec. hoist & oil pump

INLETS & HEADBOXES
1—106" Valley w/8" distributing roll
1—131" Valley w/10" distributing roll; SS lined

JORDANS
2—Appleton #1 w/A-F Brng
1—N & W Pony w/75 h.p motors
1—Horne w/AF Brngs

MOTORS 3 PH 60 CYCLE
1—100 hp GE; 440 v; 695 rpm
1—350 hp GE; 2200 v; 720 rpm: Synch
1—1100 hp West; 2200 v; 257 rpm; Synch
1—1500 hp GE; 2200v; 325 rpm; Synch

PAPER MACHINE DRIVES
1—De Laval 100 h.p. steam turbine w/reducers

PULP MILL EQUIPMENT
3—600 ton hyd. Pulp Presses
4—3 pocket grinders for 2' wood
1—Lannoye #1 Pulper

PUMPS—OPEN IMPELLER
1—Shartle 8 x 16 Triplex
1—Shartle 10 x 16 Duplex
23—Centrifugal Stock and Water Pumps

REELS
1— 36" Kohler Automatic 2 arm unwind reel
1—100" Kohler automatic two arm unwind reel; 60" dia rolls; new condition
1—123" Beloit—2 bowl
1—126" Beloit Aldrich surface drive type
1—146" B & S pope type w/Reliance drive

REFINERS
2—#1 Claflin; A-F Brng
1—24" Bauer Double Disc w/two 50 h.p. motors
1—24" Downingtown Weiner; new
1—Model 185EM Bauer w/two 150 h.p. motors

ROLL GRINDERS
1—124" x 30" Farrel w/crowning device
1—208" x 32" Farrel w/crowning device

ROLLS

Distributor—Stainless Steel
2— 8" dia. x 115" face
1— 6½" dia. x 115" face

Couch—Rubber Covered
1—14" dia. x 158" face
2—15¼" dia. x 136" face
1—16" dia. x 96" face
2—16" dia. x 198" face
3—17½" dia. x 135" face
1—18¼" dia. x 84½" face
1—18" dia. x 108" face
2—16" dia. x 65" face

Press—Rubber or Brass Covered
71 Miscellaneous sizes. Drawings available

Felt—Steel, Brass, Rubber Covered
335 Miscellaneous sizes. Drawings available

Calender—Chilled Iron
72 Miscellaneous sizes. Drawings available

ROTARY SCREENS
5—Bird #3A, Model 100 w/copper vats
1—Jones & Leithwalk copper lined

SHEETERS
1— 36" Beck w/layboys & backstand
1—45" Beck w/backstand & jogger
5—56", 60", & 70" Hamblets w/backstands
1— 65" Kidder w/ elec. eye and layboy
1—76" Beloit Duplex
2— 82" Hamblets w/backstands & layboys
1—105" Hamblet

SLITTERS AND REWINDERS

24" Maximum Rewind Diameter
3— 42" Cameron Type 6
1— 42" Cameron Type 6 Shear Cut
1— 62" Cameron Type 8
1— 72" Cameron Type 9-5

30" Maximum Rewind Diameter
1— 60" Langston Shear Cut
1— 62" Cameron Type 6
1— 72" Cameron Type 10; A-F Brng
1— 72" Cameron Type 10 Shear Cut; A-F

36" Maximum Rewind Diameter
1— 52" Johnstone Model 14H; A-F Brng.
1— 62" Cameron Type 8
1— 70" Variable Speed Center Winder
1— 72" Cameron Type 10; A-F Brng

42" Maximum Rewind Diameter
1— 40" Egan Shear Cut; A-F Brng
1— 60" Kidder Model SH Low Bed
1— 72" Beloit Shear Cut
1— 92" B & S; A-F Brng
1—136" Cameron Type 18; A-F Brng
1—156" Cameron Type 18 w/60 hp Reliance VS Drive

48" Maximum Rewind Diameter
1— 82" Langston Shear Cut; A-F Brng
1— 86" M & W Four Drum Shear Cut
1—114" Langston
1—152" Langston Shear Cut

60" Maximum Rewind Diameter
1—112" Cameron Type 18
1—120" M & W two drum w/75 h.p. drive
1—120" Langston
1—136" Langston Type DA Shear Cut; A-F

SLITTERS & REWINDERS—DOUBLE REWIND

18" Maximum Rewind Diameter
1—72" Cameron type 26-3A

24" Maximum Rewind Diameter
2—48" Langston Shear Cut

30" Maximum Rewind Diameter
1—42" Essex Shear Cut; A-F Brng.
1—42" Cameron Type 28-3
1—92" Cameron Type 28-3 w/vari-drive

STOCK CLEANERS
2—1000 g.p.m. Shartle Hydrafuges w/motors
14—Bird Dirtees; 2" & 6" bronze
1—Bird Dirtec 12". Rebuilt by Bird

SUPERCALENDERS
2— 30" Norwood 4 roll
2— 63" Norwood 8 roll; A-F Brng
1— 92" Norwood 7 roll w/drive

SUCTION EXTRACTOR ROLLS—DOWNINGTOWN
1—105" face x 19" dia.
1—126" face x 22" dia.; complete section
1—134" face x 20" dia.; A-F Brng.

SUCTION PRESS SECTIONS
1—126" face x 24" dia. RC; complete section
1—134" face x 22" dia. Sandusky w/frames, top roll, etc.

TRIMMERS—POWER BACK GAUGES
2— 38" Seybold w/motors
1— 57" Seybold Precision
3— 65", 74", & 84" Seybold Daytons
1— 84" Seybold 12Z w/air tables

VACUUM PUMPS
7—H-4, ¼H-5, & H-5 Nash
2—K-4 & K-7 (new) Nash
1—L-5 & L-7 Nash
4—#2, #3, #4, #6 & #7 Nash Hytors
1—8 x 10 Connersville
2—MD-2 Nash w/motors; new laboratory models

WET MACHINES
4— 72" w/single press section
1— 62" w/single press section

YANKEE DRYERS
1—132" face x 10' dia Beloit; 35 psi

Help Wanted

MECHANICAL ENGINEER
ELECTRICAL ENGINEER

South's largest newsprint manufacturer has permanent positions available for graduate Electrical and Mechanical Engineers to age 35. Duties are in Mill Engineering Department and include design, cost estimation, equipment selection and layouts, compiling reports, and general engineering work as required in the pulp and paper industry. Prefer applicants with 2 to 5 years pulp and paper mill experience. Starting salary based on qualifications with periodic merit increases. Complete insurance, retirement, and vacation programs established. All replies will be treated in confidence. Submit summary of experience to:

Industrial Relations Department

BOWATERS SOUTHERN PAPER CORPORATION

Calhoun, Tennessee TF

PROCESS AND PACKAGING ENGINEER

We have an opening for a process and packaging engineer with sound technical ability and at least three years experience in the field of paper and board converting. Specific experience in laminating and coating fields desirable. This position requires a man qualified to take charge of development projects and work in close contact with engineering, production and marketing people.

Salary dependent on experience and ability.

GENERAL FOODS CORPORATION
Carton & Container Division
Battle Creek, Michigan A-4

BOARD SALESMAN

An excellent opportunity to represent a large midwestern mill in marketing special food board and bleached kraft specialties in midwestern sales territory. The man we seek must be an experienced mature salesman with an established record of accomplishment. Salary open.

Address replies to Box 60-51 care Paper Trade Journal.

A-4

Help Wanted

Mechanical Engineers
Industrial Engineers
Chemical Engineers

Eastern Maine Paper Company has permanent positions open for graduate Industrial Engineers, graduate Chemical Engineers and graduate Mechanical Engineers. Two to five years pulp and paper mill experience desirable. Starting salary based on education and experience. Liberal insurance, retirement and vacation programs.

Submit resumes to:

Personnel Department
St. Croix Paper Company
Woodland, Maine

A-18

EXCELLENT OPPORTUNITY FOR

Technically trained man for market development of specialty and technical papers. Sales experience preferred, but not necessary. Must have ability to carry out contacts at all organizational levels. Send resume to:

Personnel Department
P. H. GLATFELTER CO.
Spring Grove, Pa.
Phone—Spring Grove 3216 A-4

TOUR BOSS

Progressive Eastern tissue manufacturer has need for tour boss on high speed machines. Applicants must be well experienced in technical and mechanical aspects of paper machine operations.

Liberal employee benefits; forward complete resume and salary requirement to Box 60-62 care Paper Trade Journal.

A-18

PULP AND PAPER TECHNOLOGIST

Opportunity for experienced Chemist or Chemical Engineer on growing R&D Staff, for investigation of pulp and paper, processes, and conversion methods in the fields of vulcanized fibre and laminated plastics. Fourdrinier Specialty paper experience helpful. Salary based on experience and qualifications. All replies confidential. Reply with complete information to:

John Griffith A-4

SPAULDING FIBRE COMPANY, INC.
310 Wheeler Street, Tonawanda, New York

Help Wanted

CHEMIST or CHEMICAL ENGINEER WANTED

Graduate, with three to five years' experience in the pulp and paper industry, for an integrated bleach kraft pulp and specialty paper mill. Involves work in mill control and/or process control and development. Opportunity for a competent and ambitious man to advance to positions of greater responsibility. Excellent benefits and good starting salary. Please furnish complete particulars as to experience, education and reference to:

Box 60-59 care Paper Trade Journal.

A-11

SITUATION WANTED

SR. MECHANICAL ENGINEER

with very extensive experience in the pulp, paper and board industry at high levels. Electrical training and background. Open for connection to supervise or assist in modernization or renovation projects for process or power. Address Box 60-48 care Paper Trade Journal. A-4

EXECUTIVE - WORK MANAGER

—in manufacture of boards & papers; their conversion; and film. Wishes change for challenging opportunity. Successful record in production; organization; labor relations, & development. Address Box 60-10 care Paper Trade Journal. A-25

PAPER CHEMIST

8 years experience in the formulation of all types of furnishes—seeks responsible position in the laboratory or on the managerial level. Reply to Box 60-61 care Paper Trade Journal. A-11

GENERAL SUPERINTENDENT

With extensive and successful experience in the performance and management of cylinder and fourdrinier mills. Correspondence invited with progressive companies. Address Box 60-63, care of Paper Trade Journal. A-18

Wanted

WANTED

2 or 3 web embossers for 17" x 17" 1/8 fold facial tissue napkins.

The General Cellulose Company, Inc.
Garwood, N. J.

WANTED FOR EXPORT

Fourdrinier machine, trim 84", speed 500 fpm. To manufacture lightweight Kraft specialties. Reply in Detail to Box 60-66 care Paper Trade Journal.

A-18

For Sale

74" TRIM SINGLE CYLINDER FELT MACHINE

SS Headbox, CI Vat (new 1950), cyl. mold 60" dia x 88" face (new 1950), suction couch (new 1947), suction press, two main presses, 43 dryers, 36" dia., cal. stack, reel, complete drive, winder.

IMMEDIATE DELIVERY

ROSS PAPER MACHINERY COMPANY
265 Passaic St., Newark 4, N. J.
Phone: HUmboldt 2-2177

A-11

FOR SALE

1—Dryer Section consisting of 18—36" x 76" Dryers complete with Frames, Gears and Bearings.

5—36" x 82" Dryers, Frames, Gears and Bearings.

9—36" x 84" Dryers, Frames, Gears and Bearings.
The above dryers maximum operating pressure is 50 P.S.I.G.

1—Laminator capable of handling sheets or rolls 52" width Perry Liner, 11 rolls, steam heated, Serial #322, Moore & White Simplex Sheeter with Automatic Layboy, Multiple roll backstand, separate unwind for paper.

Above equipment is located in New Jersey and can be inspected while in operation.

WRITE—WIRE—PHONE
RUDERMAN MACHINERY EXCHANGE
GOUVERNEUR, NEW YORK
Telephone 333-334

TF

For Sale

Newsprint Paper Roll Handling System Complete by 3 Ton Capacity OET Cranes. Complete with Runways, Electric Roll Grabs and PB for one man control. New condition *at a bargain price.* Current 220 AC.

HAWKINS & CO.
7203 N. Western Ave., Chicago 45, Ill.

A-4

PROPOSAL

PROPOSALS

FOR FURNISHING

PAPER FOR THE U.S. GOVERNMENT PRINTING OFFICE

SEALED PROPOSALS will be received until 10 a.m., E.S.T., April 11, 1960, in the room of the Joint Committee on Printing, in the Capitol, Washington, D.C., for furnishing the paper for the public printing and binding and blank paper ordered for the Government departments and establishments during the term of 3 months beginning May 1, 1960, deliveries to be f.o.b. Government Printing Office Warehouse, or warehouse siding, Washington, D.C.

The proposals will be opened in the presence of and the award of contracts made by the Joint Committee on Printing to the lowest and best bidders for the interest of the Government whose bids are in conformity with the requirements of the proposal. The committee reserves the right to reject any or all bids, or to accept any bid or any part and reject the other part if, in its opinion, such action would be in the interest of the Government.

Blank proposals containing the instructions, schedule, and specifications, accompanied by standard samples, may be obtained by addressing Raymond Blattenberger, Public Printer, Washington 25, D.C.

Contracts will be entered into for supplying the quantities required, whether more or less than the estimates, as provided in paragraph 26 of the Instructions.

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The approximate estimated quantities set forth in detail in the schedule comprise:

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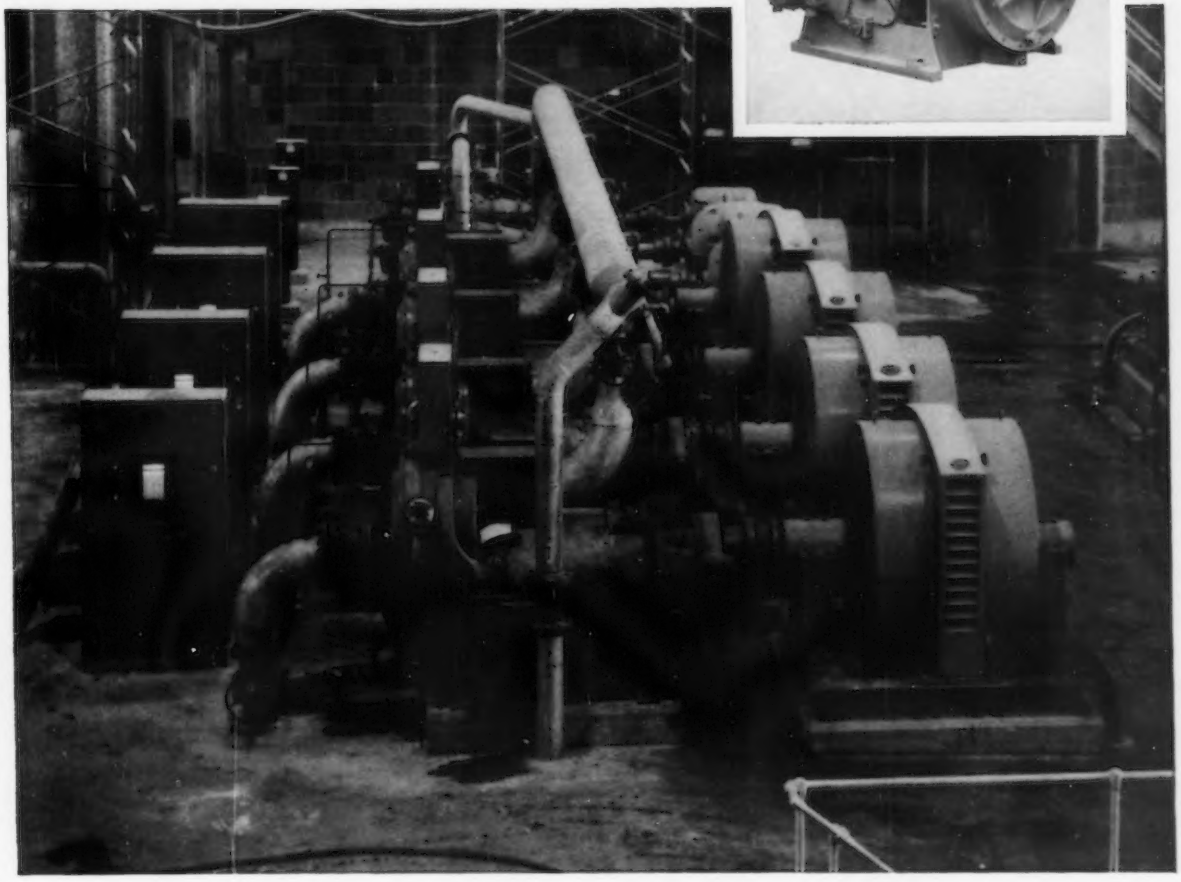

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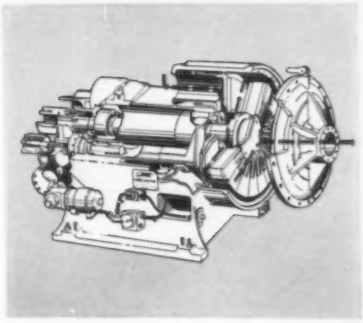

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